



CHEETAL

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The Wildlife Preservation Society of India

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Nos.1&2



A view of Ladakh from Baranacha Pass

Photo by : Rajeev Raj Mehta



Bugun Liocichla, *Liocichla bugunorum* Athreya, 2006

A new bird species discovered in Eagle nest Wildlife Sanctuary, Arunachal Pradesh by Ramana Athreya

Photo by : Ramana Athreya



The Sundarban Mangroves

Photo by A S Negi

Editorial

A few wildlife enthusiasts in 1955 had felt the need of involvement of people other than the Forest Department, & generate public support & influence government policies for conservation & protection of wildlife in India. Threat to many a species of larger wild animals were being felt by a few conservationists knowing the pulse of the nature. H H Maharaja of Nabha Sir Pratap Singh Malvender Bahadur with his keen interest in wildlife conservation & immense influence could bring around some prominent people to form the "Wildlife Preservation Society of North India" in 1958 which was first of its kind in Northern India. The organisation was finally registered as "Wildlife Preservation Society of India" on 9th September 1960. Society's office was setup at 7A Astley Hall Dehradun, the office space was purchased by the Society in 1977 & the Society is still functional from there. Prominent citizens, ex rulers of princely states, Forest officers, Army officers & others opted the membership of the Society and Maharaja Saheb of Nabha continued to patronise the Society till his demise on 24-4-1995 after which his wife Maharani Sahiba assumed the patronage of the Society but after only about two years she also passed away in 1997, leaving a will of Rs 2.5 lakh in favour of the Society which came very handy recently in repairing the totally dilapidated office rooms of the Society, a part of which had been encroached by a neighbour which could be vacated with great difficulty.

The Society started a quarterly journal in 1959 first by the name "The Cheetal" & later renamed as 'CHEETAL' which attracted response from its members and institutions connected with conservation. Today the 44th issue of this journal is in your hands. The journal brings out important issues on Wildlife & nature conservation & also the relevant news on conservation front to our readers. The young readers section introduced recently brings out some important facts to add to the knowledge of our young readers. Articles from our young readers are also printed in this section.

The relevance of such a Society and a journal such as "CHEETAL" is being felt more and more as the conservation issues are assuming importance in a world which is going blind with industrialization & consumerism & all kind of pollution is threatening extinction of more and more species of flora & fauna. The man being the only one species which can make the difference as far as the management of Biosphere is concerned, we have to educate more and more people of all sections of society in order to bring motivation among them to commit themselves for conservation of our planet & bring about a feeling of "Vasudev Kutumbakkam". (वसुदेव कुटुम्बकम्)।

A.S. Negi

CONTENTS

Readers Views		1
Wildlife Preservation Society of India. The Glorious Past	A.S. Negi	3
Management of Rajaji-Corbett: Need for an integrated planning	A.S. Negi	8
PORTRAIT OF A WILDLIFE CONSERVATIONIST	Simren Kaur	14
Give the tiger a chance	Lt. Gen Baljit Singh (retd)	16
A Unique Medicinal Mushroom (Cordyceps Sinensis)	K.S.Chauhan	21
Demographic Distribution and Management of Elephant : A review	Dr. A.P. Chaudhary	25
Conservation of some valuable medicinal and aromatic plants in Uttaranchal	S.R. Katiyar	32
From the Archives of "Cheetal"		38
Destruction of Mahseer in the Doon Valley	S.Gurukirat Singh Mann.	
Cheetal Quarterly News		40
Cheetal Young Readers Section		51
My First Contact With A tiger	Michael Harrison	51
What Makes an Insect an Insect?		53
What Makes an Elephant an Elephant ?		57

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Corrigendum

Cover page instead of Baranacha Pass Please read Baralacha Pass.

Back cover in place of Dr. B.S. Basfal, IFS Please read as Dr. B.S. Barfal IFS

Readers View

Sir,

Thank you very much for publishing my paper entitled "Avifauna in some water..... Purulia Dist. W.B., India, in Cheetal, Vol.43, No. 3&4, Pg. 35-40.

However, at the same time, I feel sorry to inform you that the table has not been incorporated in the paper which makes the publication meaningless. So, may I request you for publishing the table as corrigendum in the next issue.

Thanking you.

Yours truly,

Rina Chakraborty

Dear Dr. Rina Chakraborty,

Sorry for the omission. The table is being published in this issue as a corrigendum,

Thanks

Yours sincerely

The Editors

Dear Sir,

Herewith I am attaching my Demand Draft towards payment of my dues, Kindly renew my membership and let me know my further arrears.

Herewith I am attaching my book "The Forest of the Buddha" for review in our journal Cheetal.

With best wishes and seasons greetings,

Yours faithfully

Bulu Imam

Dear Mr. Bulu Imam,

Thanks for your subscription. We also thank you for sending a copy of your book "The forest of the Buddha". This has been kept in the Society's Library. The review of the book is being separately published in the quarterly news section of this issue.

yours faithfully

The Editors

S. Ranjan
Librarian

Shri. T.N.
Director
F.R.I. & Co.

Dear Sir,

Thank you very much for your official Receipt for Annual Membership Subscription.

I shall be very grateful if you could kindly send me my ANNUAL MEMBERSHIP CARD which I have so far not received, and membership certificate. I shall be much obliged for your price list for Cards, Calendars, Lapel Badges, & other products of WILDLIFE PRESERVATION SOCIETY OF INDIA, which please be good to send.

In the meanwhile, I shall be grateful if you could kindly arrange to send a couple of WILDLIFE SOCIETY OF INDIA stickers for my car, and 1 (one) Lapel Badge, by VPP.

Here I would like to mention that I read a beautiful article on 'The Man Eating Leopard of Uttarkashi', by Sri.A.S. Negi, IFS (Retd), in Vol. 43 of 'CHEETAL', & also happy to see the photograph of Sri A.S. Negi, IFS (Retd) in the journal. Thanking you ever so much, & with kind regards,

Yours Sincerely

G.C. AMARENDRA NAIDU.

Dear Mr. Naidu

Thanks for your Letter & Subscription. Your Subscription for the year 2005-2006 has already been received. The Society had some difficulties during past two years due to serious illness of our Hony secretary & so no annual membership cards could be prepared .

We are in the process of preparing the membership cards & will send you soon. At the moment the Society has only brass badges and greeting cards which can be used on all occasions as the inner side of the card has been left blank. The cost of badges is Rs 15/- each & that of cards is Rs. 5/- each. You may kindly indicate the numbers so that it can be sent by VPP. This will also be a financial help to the Society. Thanks for your appreciation of article & Photographs in "Cheetal".

Your Sincerely

Editors

Corrigendum

In the article by Dr. Rina Chakraborty "Avifanna in some water.....Purulia Distt W.B. India, published in preceding Vol. 43(No.3&4) page 35 to 40 of Cheetal, following table was omitted due to oversight which is now being printed here on pages 63 to 68 for the benifit of our readers

Editors

Wildlife Preservation Society of India.

The Glorious Past

A.S. Negi

In a meeting of few people concerned with Wildlife conservation held in the autumn of 1955 at the instance of Late Mr. PD Stracey IFS, then serving in Forest Research Institute & colleges Dehradun, a committee was formed under the adhoc chairmanship of Mr. ML Holdsworth, then school master in Doon School to Chalk out a constitution for a "Wildlife Preservation Society of Dehradun & Saharanpur". Later with keen interest taken by, HH Col. Maharaja Sir Pratap Singh Malvendra Bahadur KCSI, Maharaja of Nabha "The Wildlife Preservation Society of Northern India" was formed on 13-4-1958 under the presidentship of the Maharaja himself with Mr. PD Stracey IFS as vice president & Mr. J N Onial PFS as Hony Secretary. The Society started a Journal "The Cheetal" in 1959 with great response from conservationists, Army officers, Forester etc. & the first general body meeting of the Society was held on 19th April 1959. The Society's name was later changed & "The Wildlife Preservation Society of India" was registered vide registration No. 1262/2-10029 dated Lucknow, 9-9-1960 under Registration of Societies Act XXI of 1860 (Registration No. 273 of 1960-61).

The first executive committee of the Society was constituted as under

President :-

His Highness the Maharaja Sahib of Nabha,
"Hira Nahal" Nabha. (Punjab)

Senior Executive Vice President :-

Shri. S.S. Negi
Cement Road, Karanpur,
Dehra Dun.

Vice Presidents :-

His Highness The Maharaja of Kotah,
Kotah. (Rajasthan)

Mr. R.L. Holdsworth, (School Master)
The Doon School, Dehra Dun.

Dr. Bains Prasad, (Retd. Government Servant)
10 Dobalwala, Dehra Dun.

S. Ranbir Singh, (Businessman)
11 Inder Road, Dehra Dun.

Shri. T.N. Srivastava,
Director Forest Education,
F.R.I. & Colleges, P.O. New Forest, Dehra Dun.

Honorary Secretary :-

S. Gurkirat Singh Mann, (Businessman)
Mann's Lodge, 17 Chander Road, Dehra Dun.

Asstt. Hony. Secy :-

Shri. S.K. Sangal, (Lecturer in D.A.V. College)
16 Kutchery Road, Dehra Dun.

Honorary Treasurer :-

Dr. R.N. Misra,
11 Sewak Ashram Road, Dehra Dun.

Members :-

1. Dr. J.S. Taylor, (Missionary)
Children's Home, Bhogpur, Dehra Dun.

2. Sodhi Kartar Singh,
Landlord, Townsend, Jakko, Simla.

3. Shri. Tej Bahadur Singh, (Retd. Army Officer)
11 New Cantonment Road, Dehra Dun.

4. Sardar Rajdev Singh, (Mill Owner)
Laksar Sugar Mills (P) Ltd., Laksar.
(Distt. Saharanpur)

5. Shri. Narendra Singh, (Principal.)
Col : Brown's School, Dehra Dun,

6. Mr. E.G. Mainwaring, (Retd. Army Officer.)
Cambrian Hall,
13 Young Road, Dehra Dun.
7. Sardar. Ujjal Singh, (Mill Owner.)
Laksar Sugar Mills (P) Ltd. Laksar.
(Distt. Saharanpur).
8. Brig. Gambhir Singh,
(Director Survey of India)
70 Rajpur Road, Dehra Dun.
9. Col. C.N. Adams,
"Charleville" P.O. Clement Town, Dehra Dun.
10. Dr. R. S. Gupta, (Retd. C.F.)
10 Chakrata Road, Dehra Dun.
11. Dr. S.L. Goyal, (M.B.B.S.)
Chakrata Road, Dehra Dun.
12. The Sactetary,
The Wild Club, F.R.I. & Colleges,
P.O. New Forest, Dehra Dun.
13. The Secretary, The Shikar Club,
Indian Military Academy,
P.O. Premnagar, Dehra Dun.
14. Shri. H.K. Dang, (School Master.)
The Doon School, Dehra Dun.
15. Capt. Reginald Sawhney, (Army Officer.)
6 Jorbagh Nursery, New Delhi.
16. Sardar. Vivek Singh Majithia,
Sardarnager, Gorakhpur. U.P.
17. Shri. K.S. Srivastava, Advocate,
11 Circular Road, Dehra Dun.
18. Shri. T.S. Negi, (Retd. I.P.)
30 A, Raipur Road, Dehra Dun.
19. Col. M.L. Mehta, (Army Officer.)
Inspectorate Technical Development Estab-
lishment
Instruments, Sunderwala Camp, Dehra Dun.
20. Mr. P.D. Stracey, (Retd. I.F.S.)
18, Cantonments, Shillong, Assam.
21. Dr. M.B. Lal, (Professor. D.A.V. College.)
52 Mansinghwala, Dehra Dun.
23. Shri. Padam Bahadur Singh, (Business-
man.)
"Dilkhusha" Dehra Dun.
24. Mr. V.J. Binney, (Businessman.)
M/S.Himalaya Arms, Gandhi Road, Dehra Dun.
25. Sardar Balbir Singh, (Deputy Commis-
sioner.)
Deputy Commissioner's House, Gurgaon.
(Punjab)
26. Sardar Raghubir Singh Sandhanwalia, (Mill
Owner)
M/S : Simbhoali Sugar Mills (P) Ltd.,
Simbhoali P.O. Distt. Meerut. U.P.

Ex-Officio Members and Members of the Executive Committee :-

1. The Chief Wild Life Warden U.P.,
Wazir Hassan Road, Lucknow. U.P.
2. The D.F.O. Dehra Dun Division, Dehra Dun.
3. The D.F.O. Saharanpur Division, Dehra Dun.
4. The District Magistrate, Dehra Dun.
5. The Superintendent of Police, Dehra Dun.

The quarterly journal of the society was named as "Cheetal" with cheetal stag head as its Logo. H.H. the Maharaja of Nabha remained the Patron of the Society till his demise on 24-7-1995. He was also a driving force for the Society. After his demise Rajmata Urmila Devi of Nabha was the patron till her death in 1997. Rajmata Ji in her will set aside Rs.2.5 lacs for the Society which was of great help for renovation of the society's office building at 7 A Astley Hall Dehradun, which was in a dilapidated condition.

The society has gone a long way since then. Volume 44. of the Society's Journal "Cheetal"

brings this history of the Society to its members & readers. Present membership of the Society stands as follows.

Life members	209
Annual member	33
Student member	3
Institutional member	30
Ex officio members	54
Total	329

To add to the honour of "The Wildlife Preservation Society of India"

Two former Presidents of India Late Shri V V Giri and Late Shri Fakhruddin Ali Ahmed have been the Chief Patrons of the Society.



Shri Fakhruddin Ali Ahmed

President of the Republic of India

is pleased to be the

Chief Patron

of the

Wild Life Preservation Society of India

By Command of the President of the Republic of India

R. L. S. G.

Major General

President's Secretariat,

22 April 1973

Military Secretary to the President



Shri V. V. Giri

President of the Republic of India

is pleased to be the

Chief Patron

of the

Wild Life Preservation Society of India

By Command of the President of the Republic of India

Military Secretary Office

3 November 1972

Major General

Military Secretary to the President

Meeting of The Wild Life Preservation Society of Northern India, Held at Hira Mahal Nabha on 21st December, 1958

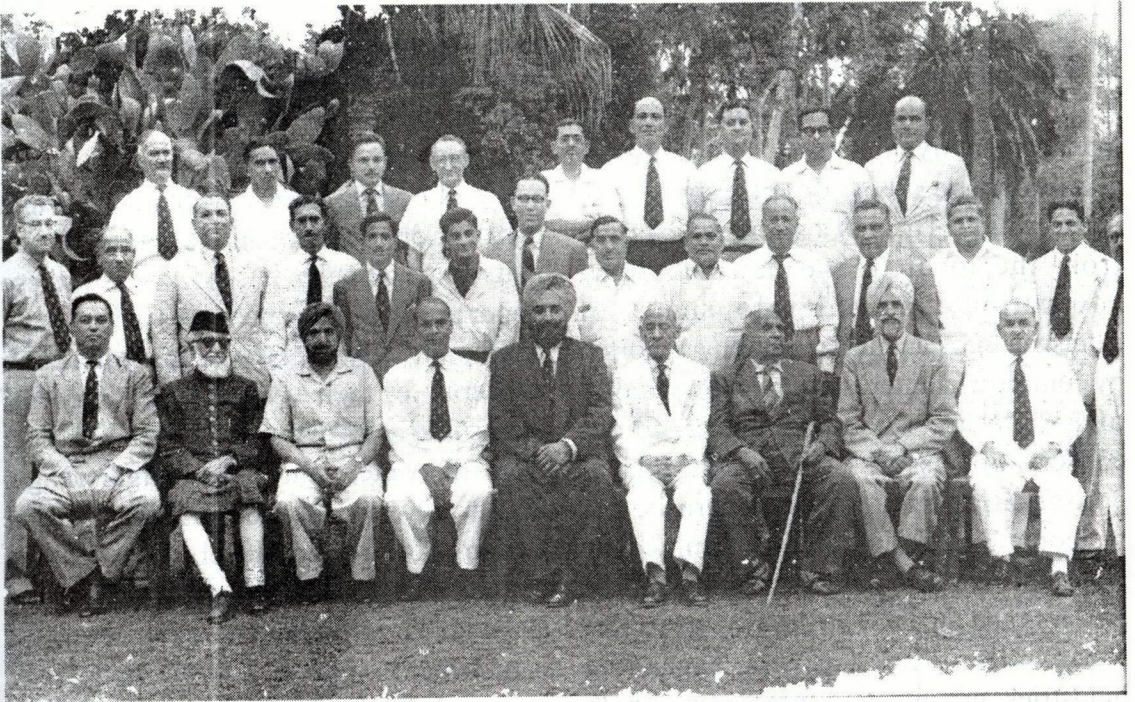


On Ground (L. to R.) Sh. K.L. Mehra, Dy. Game Warden (H.P.) S. Angad Singh Conservator of Forests Wild Life. Punjab.

Standing 1st Row (L. to R.) S. Mehar Singh Grewal. P.C.S. Hony. Secy, Wild life Association, Amritsar. Sh. P.D. Stracey, I.F.S. Vice President, Mrs. Gardiner Bump, H.H. Col. Maharaja Sir Pratap Singh, , Malvendra Bahadur K.C.S.I., Maharaja of Nabha(President) Sh. G.S. Dhillon, Chief Conservator of Forests, Punjab.Ch. Dharampal Singh, Conservator of Forest Nabha. S. Ranbir Singh, Maharaj Kumar of Bijawar.

Standing 2nd Row (L. to R.) Raja Ram Partap Singh, S. Avtar Singh D.F.O. Hissar, Dr. Gardiner Bump., Tikka Khushwant Singh of Badrukhan, Sh. I.S. Kang D.F.O. Patiala, Sh. J.N. Onial, P.F.S. (Retd) Hon Secy., Capt Jasbir Singh.

**The Wild Life Preservation Society of Northern India
First Annual General Meeting, 19th April 1959
Dehradun**



Chairs : Major M.A.R. Skinner, Sh. Hamid A. Ali I.C.S.)(Retd.), S. Gurkirat Singh Mann, Sh. P.D. Stracey I.F.S. (Vice President), H.H. The Maharaja of Nabha (President) Sh. J.N. Onial,(Hony. Secretary), Sh. Manchanda, S. Ranbir Singh, Sh. B. Mitchell.

1st Row : (Standing) Mr. Harrison Taylor,(U.S.A.) Mr O.D. Jackson, Sh. K.S. Srivastva, Sh. K.L. Mehta, Sh. S. Gupta, Sh. A Oswald, Sh. B. Wadhvani. Sh. Narindra Singh, Sh. T.S. Negi (IP Retd.) Sh. P.N. Bari, Sh. Y.M.L. Sharma, Sh. A. Shah, Dr. R.S. Gupta

Back Row : Sh. Tej Bahdur Singh, Sh. A.L. Rao, Capt. Norton, Dr. B. Frank (U.S.A.), Dr. S. Krishnaswamy, Sh. S.P. Sahi, Sh. A. Rashid, Sh. K.K. Nair, Sh. M.A. Edwards

Management of Rajaji-Corbett: Need for an integrated planning

*A.S. Negi

1. General

The biggest problem facing management of habitats in India is to keep a balance between development and conservation. There is a strong lobby right from the local to the national level advocating fast development of infrastructures and urbanization supported by commercial interests and only a handful of people are raising concerns about conservation issues. The people raising conservation issues are generally not welcome and their voice is dimmed by powerful people in politics, administration, business and media. The developments like roads, railway lines, canals, expanding industries, urbanization, pressures of both human and cattle population are increasing very fast. All this is leading to habitat fragmentation and problems of connectivities between adjacent habitats.

The most glaring example is that of the Tarai forests in the foothills of Himalayas in India and Nepal. Almost 50 years ago there was a 1600 km. long necklace of rich forests and grasslands stretching along outer reaches of Himalayas straddling the India/Nepal boarder. This stretch better known as Tarai Arc is today fragmented into small habitats in both the countries and no single reserve is large enough to maintain a viable population of

large mammals like elephants and tigers without the opportunity for them to disperse from one refuge to another.

Looking back into the habitat and distribution of tigers and Asian elephants in its range globally, it is evident how these important charismatic mammals have shrunk to population levels which are causing concerns for their very survival. Three of the 8 sub species of tigers are already extinct from the outer margins of Tiger range. Fourth sub-species, the south China Tiger has shrunk to a critical level. The remaining populations are also badly fragmented and isolated. The situation of Asian elephants is no better.

Rajaji-Corbett is the North-Western limit of tigers and Asian elephants. This has been classified as Tiger Conservation Unit (TCU) No. 1 by Tiger experts. On the basis of Indices for habitat integrity, poaching pressure and population status the TCUs have been ranked as level I, II & III all over the tiger range in the decreasing order of their importance & Rajaji-Corbett has been ranked as level I TCU.

2. Past History

Rajaji-Corbett was part of contiguous Tarai Arc Landscape extending from river Sarda bordering Nepal in the East to river Yamuna bordering H.P. in the

* Advisor, Wildlife Govt. of Uttaranchal, former CWLW Uttaranchal & former Director Corbett Tiger Reserve

West. It had rich Sal forests with patches of mixed forests, riverine forests and grasslands. Due to its rich bio-diversity and presence of rich wildlife, Corbett N.P. was created in 1936, which was later extended. Rajaji was created out of Chilla, Motichur and Rajaji Sanctuaries in 1983 and Sonanadi Sanctuary was created in 1987. The approximate area in early fifties was over 7000 sq. km. of contiguous forest. Just after independence large chunks of Tarai grasslands and mixed forests were cultivated by people displaced from Pakistan and a large habitat was lost to agriculture.

In sixties there was a move to replace forest grasslands and mixed forests into monoculture eucalyptus and poplar plantations and later on teak was also planted. Four mechanized plantation divisions were created and by late eighties more than 1000 km² mixed forest was converted into monoculture. The area was leased out for agricultural crops along with raising of plantations which further degraded the habitat & depleted the wildlife.

In 1991 about 800 km² of buffer area was added to the Corbett National Park and brought under the intensive wildlife management of Corbett Tiger Reserve. In 1994, three villages were relocated from the southern boundary of Corbett Tiger Reserve and about 200 ha area returned to the prime habitat. The experiment was extremely

successful. Few of the monoculture plantations in the buffer were replaced by mixed plantations and agriculture leases were stopped in the buffer area brought under the control of Corbett Tiger Reserve.

Some prime wildlife habitats rich in bio-diversity still remain outside & are not being managed properly from wildlife point of view. Such areas are Kotari (including Kolhu chaur area), Dogadda and Laldhang Range of Lansdown FD, Nandhaur Valley of Haldwani FD, Sitabani-Kota bag area of Ramnagar FD & Chiriyapur & Shyampur Ranges of Hardwar FD. These areas are important as corridors & connectivities between Prime Wildlife habitats.

The creation of new State of Uttaranchal has reduced about 32 km² area of the buffer of Corbett Tiger Reserve in the southern part from its management and is now part of Bijnor Forest Division of U.P. Entire Bijnor Plantation Division forming part of the buffer of Sonanadi Sanctuary is also no more within Uttaranchal. Shivalik Forest Division close to Rajaji National Park is also now part of U.P. The sensitivity along southern boundary of Corbett Tiger Reserve and Rajaji National Park has increased due to problems associated with interstate boundary.

3. Present Status

Rajaji-Corbett landscape has now following categories of forest areas:

1. Protected Areas	(1) Corbett NP- 521 km ² (2) Sonanadi WLS- 301 km ² (3) Rajaji NP- 820 km ² Total- 1642 km²
2. Area Managed as buffer of above PAs	(1) Buffer of CNP and Sonanadi WLS under CTR management = 464 km ² (since 1991)
3. Areas managed under normal working plans of Forest Divisions	(1) Part of S. Pithoragarah FD-50 km ² (2) Haldwani Forest Div.- 800 km ² (3) Ramnagar Forest Div.- 500 km ² (4) Part of Hardwar Forest Div.- 50 km ² (5) Dehradun Forest Div.- 400 km ² (6) Shivpuri Range of Narendra nagar FD 50 km ² (7) Lansdowne Forest Div.- 400 km ² Total- 2250 km²
4. Areas managed under monoculture plantations	(1) Tarai East Forest Div.- 500 km ² (2) Tarai Central Forest Div.- 400 km ² (3) Tarai West Forest Div.- 400 km ² (4) Part of Hardwar Forest Div.- 50 km ² Total- 1350 km²
5. Areas now falling in U.P.	(1) Bijnor Forest Div. including areas close to CTR- 500 km ² (2) Shivalik Forest Div.- 350 km ² Total- 850 km²

The above areas have now been fragmented in several smaller isolated blocks, some of them no more viable for tigers and elephants. During a recent survey of presence and absence of tigers conducted

by Operation Eye of the Tiger-India (NGO) it was found that the tiger was absent from Shivalik, part of Dehradun, Shivpuri Range, Bijnor Division and part of Haridwar Division.

4. The Bottlenecks

- (1) Large forest areas in Nepal across Sarda river have been clearfelled and converted into agriculturer Land & human habitation.
- (2) Haldwani-Kathgodam area has overgrown, there is heavy mining activity in Gola river and there is no connectivity between areas East and West of Gola river.
- (3) Due to several resorts coming up along the right bank of Kosi, the connectivity for elephants is becoming critical.
- (4) Due to overgrowth of Kotdwar town and increased traffic on Kotdwar-Pauri road the connectivity has become critical for elephants on either side of Khoh river.
- (5) There is hardly any connectivity across river Ganga at Hardwar. There has been a long drawn struggle for this small corridor- due to apathy of Army towards this sensitive issue of conservation importance, without any success so far.

5. Possible Solutions

The ideal solution for such a landscape as far as management of large mammals such as Asian elephants & tigers is concerned would require the following.

- (a) Landscape planning and management including management of existing forest Divisions outside PAs.
- (b) Checking further habitat disintegration and degradation and establishing some vital corridors & connectivities on priority basis.
- (c) Checking poaching & illicit felling
- (d) Awareness building & ecodevelopment measures.

Looking at the present scenario, we have not been doing anything like landscape planning of habitats. There are two set of criteria of management. one for PAs and

other for RFs. Even among PAs we have separate management plans for each PA and there is no scope for their integration at landscape level because in between there are RFs managed under separate sets of working plans. The working plans are prepared for different FDs for different periods and each working plan is independent. It does not look into the problems at landscape level. The working plans of Forest Divisions do not have proper prescriptions for wildlife management or habitat management. Due to lack of integrated approach in habitat management the following difficulties are being faced:

- (1) Individualistic approach towards cases related to transfer of forest land for development works-resulting in loss of connectivities and habitat disintegration.
- (2) Continuous patches of monoculture forest crops leading to loss of fodder and pray & finally causing human. wildlife conflicts.
- (3) Acceleration of man-animal conflicts.
- (4) Isolated approach to Gujar resettlement leading to delays and ultimate destruction of habitat.
- (5) Lack of vision for management of large mammals such as elephants and tigers.
- (6) Lack of funds for planning at landscape levels.
- (7) Lack of research and monitoring at Landscape level.

It is therefore most essential to have landscape planning and management as far as wildlife and their habitats are concerned. Following steps are immediately needed:

A. At Landscape Level :

- (i) Preparation of a broad landscape vision

plan.

- (ii) Guidelines for preparation of working plans and management plans on a landscape level.
- (iii) Restoration of corridors & connectivities.
- (iv) Identification of rich biodiversity areas and managing them as mini cores.
- (v) Coordination with neighbouring state/ country.
- (vi) Involving international and national funding agencies.
- (vii) Relocation or resettlement plan for Gujars or any other people wanting to settle away from PAs and RFs.
- (viii) Dealing of forest land transfer cases at landscape level.
- (ix) Management plans for elephants and tigers.
- (x) Research and monitoring.
- (xi) Protection measures such as revival of wildlife regions for checking poaching.

B. At Local, Divisional or PA Level

- (i) Critical review of working/management plans.
- (ii) Prescriptions for conversion of part of monoculture forest plantations into miscellaneous eco friendly habitat with local species in such a way that fodder and prey availability increases.
- (iii) Identification of mini core areas in various forest Divisions.
Example-Kolhuchaur in Lansdowne Forest Division.
- Sitabani in Ramnagar Forest Division.
- Kaldhunga- Ladhiya Valley in South Pithoragarh Forest Division.

- Nandhaur valley in Haldwani Forest Division.

- Part of Shyampur Range adjoining Rajaji NP in Hardwar Division.

(iv) Conservation friendly prescription in these mini core areas in the WPs of respective Forest Divisions.

(v) Orientation and training of field staff of non-PAs in wildlife.

(vi) Special attention on wildlife protection in mini cores and other important wildlife areas.

(vii) Coordination with nearest Forest Division or PA for corridor restoration and management.

(viii) Coordination with wildlife regional staff at local level and Chief Wildlife Warden at State level.

(ix) Efforts for mitigation of damages by wildlife.

(x) Plantation of wild fruit trees in the regular plantations and non-removal of these trees during felling operations.

(xi) Arrange visit of Forest Division field staff in nearby PAs.

(xii) Creation of waterholes and viewing machans at appropriate places in RFs- specially the mini core areas.

(xiii) Motivate Gujars to settle outside RFs and help in resettlement process as and when required.

Rajaji-Corbett is synonymous to the important North-Western habitat of elephants and tigers in India which extends from Sarda in East to Yamuna in the West. With prestigious PAs such as Corbett and Rajaji it would not be difficult to illicit support for restoration of integrity of this important and critical habitat.

References

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AJT Johnsingh, Quamar Qureshi, SP Goel, GS Rawat, K.Ramesh, Ashish David, K. Rajapandian, Somya Prasad. Conservation Status of Tiger associated species in the Tarai Arch Landscape, India, A project report.

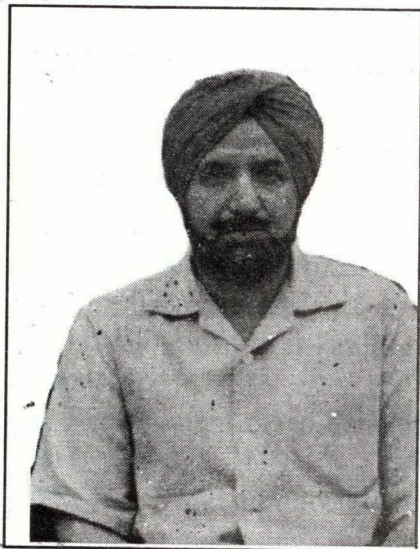
Management Plans of CTR & Rajaji National Park.

Working Plans of Haldwani, Ramnagar, Lansdown & Haridwar FDs.

PORTRAIT OF A WILDLIFE CONSERVATIONIST

Late Sh Gurkirat Singh Mann *first Hony. Secretary of Wildlife Preservation Society of India, Dehradun.*

**Simren Kaur*



A Society for the preservation of Wildlife was established in 1958 by the Maharaja of Nabha, its Patron, for the functioning of which 7, Astley Hall Dehra Dun was bought by him as an office. Amongst the first few office bearers was my father Gurkirat Singh Mann of Nabha, a close associate of the Patron. He was the first Honorary Secretary of Wildlife Preservation Society of India, Dehradun who rendered valuable services to the Society by his dedication & foresight from September 1960 to Feb 1963.

Of post independence India, it was the first organization to further the cause of wildlife conservation, which speaks volumes for the intuitive foresight of the Maharaja of Nabha concerning the conflicts and contradictions

inherent between "development" and conservation of bio-diversity as we have come to comprehend these terms today, sixty years after the Society was conceived (1955).

I remember the beginnings of their journal "Cheetal" and the excitement and pride it used to generate in my father as he handed me a copy. In those incipient days, if I recall correctly, it was a few sheets stapled together with black and white photographs. Over the years, as membership increased, it slowly became a proper journal with its beautiful Cheetal stag head as its logo.

I remember the brass buttons, a dozen of them, given to me for my jacket. They were beautiful. Other items, like neckties and scarves also began making an appearance as the Society made progress.

Born on 3rd October 1903 at Nabha (Punjab), Gurkirat Singh Mann believed in

conservation of forests and wildlife and ethical hunting for the pot only, and in those days, when game was plentiful, it was perhaps alright to do so. Now, total ban is what he would have advocated too, were he alive today. He died on 12th April 1986.

He was a keen angler, and a lover of dogs, winning many trophies in Field Trials held from time to time; and he could never stay away too long from a trip into the wilds, if for nothing else, just to be out and close to Nature. I was his ardent follower in these excursions during every school vacation.

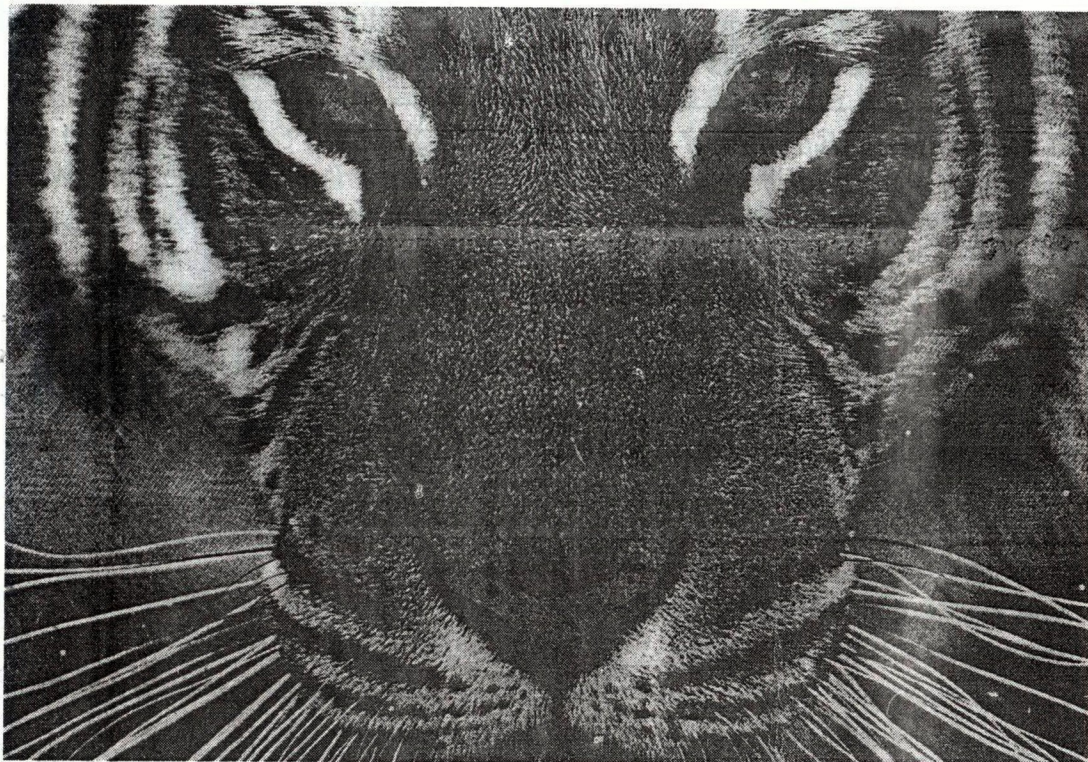
The author is the daughter of Late Gurkirat Singh Mann & wife of Lt Gen (Rtd) Baljit Singh a Veteran conservationist and regular writer on the subject who is instrumental in introducing conservation ethics in Army.

Give the tiger a chance

**Lt. Gen Baljit Singh (retd)*

After a two year odyssey across the tiger region, Charles Darwin's great-great granddaughter Ruth Padel comes to the conclusion that this prized and endangered animal has no future.

**Lt. Gen Baljit Singh (retd) assesses how credible is her tiger tale.*



The tiger evolved some 2.4 million years ago in the forests of the Amur river watershed in far-eastern Russia. Gradually, it swept southwards in mainly along the eastern and southern seaboard of the Asian mainland. There was a limited spread in Central and Western Asia as well. This process concluded about 12,000 years ago when the tiger reached the southern arc

from Cape Comorin in India to Bali in Indonesia. Due to certain geological evolutionary factors, the tiger remained exclusively an Asian mammal.

Around 1900, taxonomists had classified the tiger into eight subspecies. Of these, the Balinese, the Javanese and the Caspian tiger species have already become extinct; the former in September 1932 and the last

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The author is a hardcore conserationist who regularly write on wildlife conservation

named as recent as in the 1980s.

So admittedly, five subspecies of the tiger have entered the 21st century but does it have a future? Ruth Padel takes a two-year sabbatical from her life's persuasion (she's a well published and contemporary poet in the UK) to find the answer. Indeed, it is surprising for a poet to do so but not really when the poet happens to carry Sir Charles Darwin's genes.

Ruth is his great-granddaughter! Obviously, Ruth does not believe in half measures. To begin with, she went through heaps of tiger literature and met all contemporary authorities on the tiger. She learn that in terms of today's nation states, tigers had inhabited 20 countries of

Asia. But by 2000, the tiger survived in 12 only. Then Ruth set out on this incredible journey of tiger exploration covering the entire tiger range with the zeal of a "convert".

Tigers in Red Weather, published a few months ago, is the result of Ruth's two-year-long odyssey. And from the extent of research and weight of evidence gathered at first hand, Ruth comes to the terribly disquieting belief that the tiger has no

future. Nevertheless, she hopes that somehow the tiger just might avoid extinction.

Now, how credible is Ruth's assessment? Well according to Valmik Thapar, one of the two foremost tiger men of India, "This is the best book on tigers of the world that I have ever read... to find out if the tiger has a chance to survive... this is ultimate

tiger voyage that no one should miss."

The next legitimate concern which an average person would voice is that given a chance, could we save the tiger from extinction? Yes we can, and Ruth's postulation is fairly uncomplicated: simply provide the tiger with the three basic resources of

survival-cover, water and prey-which together constitute a tiger habitat. With the aid of a simple map in the book, Ruth shows the habitat as in 1900 and how it has shrivelled up by 2000. The awesome pressures generated by the human population explosion coupled with the forces of monetised economy diminished tiger habitat by almost 90 per cent on the global scale.

A questioning mind would next enquire that

Tigers in Red Weather, Published a few months ago, is the result of Ruth Padel's two year long extensive research, she learnt that in terms of today's nation states, tigers had once inhabited 20 countries of Asia. But by 2000, they survived in 12 only

in the event of an assured global moratorium on further depletion of tiger habitat in Asia, will this splendid animal live happily thereafter? Even an optimist would hesitate to answer in the affirmative. And why? Because neo-consumerism has spawned a few barbaric and vulgar lifestyles, making the tiger one of the most cherished commodities in global commerce.

Perverse though it may seem but the tragic fact is that each part of the tiger's body carries an unbelievably high price tag. About a decade ago, there was a numbing photograph in Time magazine of a tiger in a cage in a bazaar somewhere in Cambodia. This tiger was being publicly auctioned, one body part at a time, to the highest bidder before its slaughter. The overall price fetched was astronomical; perhaps equal to its weight in gold.

The Cambodian Government was prevailed upon to end the public auction and slaughter of the tiger. But a decade later, Ruth found that the pace and volume of tiger commerce in China and SE Asia remains undiminished. A single tiger skin is valued around \$ 6,000. One bowl of soup flavoured with soup stalk from a tiger's penis is for \$ 100. Noodles garnished with slivers from tiger's liver and toothpicks from tiger whiskers come next in preference.

Tiger bone powder is the staple ingredient in the traditional Chinese medicine (TCM) for ailments ranging from arthritis, rheumatism, high fever, palsy, piles and so on. And the tiger penis-powder pills, considered to be the ultimate aphrodisiac, are the most popular merchandise in Bangkok. In the event, Ruth was not overtly

surprised but disgusted to hear a fairly common refrain in Laos and Thailand:

"Kill a tiger and buy a motorbike." Of late, TCM has made inroads in the US too. As Ruth says "TCM is a proud, popular, lucrative expression of the oldest continuous culture in the world. In 1998, 50 per cent of the TCM shops in cities with weak trade controls (like Atlanta, LA, Vancouver) were selling tiger products made in China; in New York, over 80 per cent. In London, tiger-bone products overflow the cupboards of the wildlife protection offices at New Scotland Yard." In the 1960s, Mao Tse Tung had declared the tiger, believe it or not, an agricultural pest. As a result, over 3,000 tigers are believed to have been killed in less than a decade. There are no more tigers in the wild in China any more. But China does not and is not Willing to give up the TCM culture. So tigers in the rest of Asia become mere pawns in the demand-and-supply equation of commerce.

Ruth believes that Valmik Thapar's estimate of tigers in Asia today is probably the closest to the truth: "Three thousand in India, 400 each in Sumatra and Russia, 350 all told in Nepal and Bhutan. South-East Asian countries and Malaysia may be one or two hundred each. May be 5,000 over all."

Now when India has more than 50 per cent of the world's tigers in the wild, regrettably there is neither visibly forceful public support nor the unequivocal political intent to ensure its survival. Who would then doubt Ruth's report on this contraband seizure? "Thirty one tiger skins, 581 leopard skins, 778 otter skins seized in Tibet in just

one Nepalese truck, going to China but all killed in Indian forests.”

Touched by the immensity of the crime, the poet in Ruth surfaces thus: “The roof of the world, water source, spiritual and cultural source for so much of Asia: you cast a new shadow now. In your own tragedy, you are a route of death to tiger now.”

“In the month of June 2004, 10 tiger skins, 25 leopard skins, four sacks of tiger bone and claws from 31 tigers and leopards were found in 11 seizures in India and Nepal”, says Ruth. Claws are set in silver and gold for wrist and neck jewellery.

In Indonesia, where about 200 tigers survive in the two reserves in Sumatra, Ruth learnt from the locals and the Global Tiger Patrol that “each park loses 30 tigers a year... bones go to China, the local market is for skins. Politicians, army chiefs, businessmen, civil servants want stuffed ones for their vestibules, Stuffed tigers say you are Mr Big above the law.”

In India it is much the same. Last year, *India Today* (July 11, 2005) carried a detailed expose on wildlife crimes in Madhya Pradesh, India’s “Tiger State”. Among the wrongdoers, there were two very senior bureaucrats, one each from the IAS and the IPS. While the former had on full display in his residence two stuffed tigers and one panther, the latter had two floor rugs of several tiger skins stitched together. Neither were any seizures effected nor any penalties imposed; rather the possessions were given legitimacy as bona fide sporting-trophies. In the UK, Audy Fisher, head of wildlife crime at the New Scotland Yard, showed Ruth “a stuffed 10-week-old tiger cub mounted on olive-wood, impounded from

a British film director...The western market is out of control and its hub is China, to whose tune Asian wildlife crime dances.” For the ultimate in insensitive, unbridled consumerism, Ruth recounts a news ad from Singapore: “Cuddly tiger cubs, \$ 20,000, can be delivered to any home in Singapore.” I believe a few websites dealing with pets in the US have similar offerings. Every affirmative response to such an ad means one more cub lost in the wild. More serious is the fact that with every tigress-mother killed, the prospect of maintaining the optimum population of the species gets destroyed.

Efforts by individuals and NGOs to check and reverse tiger crimes are severely hampered by rampant corruption. Ruth cites the case where NGOs prevailed on the Asian Development Bank to give \$ 82 million grant to the Bangladesh Government for a Sunderbans conservation project in 2000. Filtering through the political and bureaucratic maze, “in the end, only \$ 5 million of the original \$ 82 million” was left for benefiting the Sunderbans tigers, per se.

In the entire tiger range, Bhutan alone has the unblemished record of tiger conservation. The Bhutanese Government declares emphatically that “the tiger is a non-negotiable species. We have committed to protect it and we will.” Here is something for us to emulate in India. We too have legislation but, according to P.K. Sen, former Director, Project Tiger, about 20 tigers are poached in India every month. As for the common man in Bhutan, he firmly believes that “the tiger is good fortune for us...we will have good crop if

the tiger is around". Ruth reacts to this humorously: "It is true, it will keep the deer away from their crops.

In Myanmar, the tiger population had dwindled rapidly post World War II, leaving no more than 80 tigers. But in the 1990s, Alan Rabinowits and George Schaller, two scientists of the Wildlife Conservation Society, New York, gained the confidence of the junta on matters related with nature conservation. After a decade long research, the two scientists recommended the establishment of three sanctuaries in north Burma, which has excellent tiger habitat coupled with very low human density. One of the Generals, genuinely interested in tiger conservation, shot back: "Why not have the whole of the Hukaung valley as a tiger protected area? So indeed, "in 2004 it became the world's largest tiger reserve: 8,400 sq miles, larger than all India's reserves combined. Eighty to 100 tigers, which could multiply 10-fold if protection and management plans work..."

Prime Minister Manmohan Singh and his team of the Tiger Task Force would be well advised to take briefings on the Bhutanese and Myanmar tiger conservation efforts. There is much which we could replicate with great advantage. For instance, to begin with transfer the control of all tiger reserves in the country to one central agency under the PMO, for the next 20 years at the least. Once the poaching is checked, the habitat reasserts itself and the tigers stabilise, the arrangement could be reviewed afresh, if necessary.

In this tiger-doom scenario, Ruth firmly believes that the common man is certainly not in conflict with the tiger. Rather she

respects the tiger's nobility. Ruth encountered a villager in the Kerinci reserve in Sumatra and to her inquiry whether they lived in fear of the tiger, the reassuring answer was, "If pugmarks are seen by the house, it is believed that a tiger has come to stop something bad happening in the family."

Another villager living in Sumatra's second reserve was even more emphatic: "Last week I saw a tiger very close. I saw he wanted to eat my dog. I said: 'Please, sir, do not interfere with my dog.' After I said that the tiger went away." Now do remember this episode if ever you come face to face, up close with a tiger. For you will have an exciting experience to recount. The tiger is not at all a wanton killer. Here is a classic, first-hand observation by the inimitable Jim Corbett: "I once saw a tigress stalking a month-old kid. The kid saw her and started bleating. The tigress gave up her stalk and walked straight up to it. The kid went forward to meet her and stretched out its neck to smell her. For a few heartbeats, the month-old kid and the Queen of the Forest stood nose to nose. Then the queen walked off in the direction she had come from."

Outside of India even though the tiger has its presence in 11 countries of Asia, you can seldom see one because of its low density and heavy forest cover. India is the only country in the world where you have a fair chance of seeing a tiger in the wild. It is every Indian's birthright both to watch and preserve the tiger. So hurry, but remember the witticism from Ruth Padel:

"You cannot Plan to see a tiger, Just as you cannot plan to fall in love".

A Unique Medicinal Mushroom (*Cordyceps Sinensis*)

*K.S.Chauhan

Introduction

Cordyceps sinensis, a unique medicinal mushroom has long been used as folk medicine throughout China, Tibet, Japan, Nepal and Indonesia. This mushroom grows only off the head of a buried caterpillar in high mountainous regions of Himalayas at a height of about 14000 to 16000 ft naturally. This mushroom pokes through the soil and grows up through the grass where the yaks graze the mushroom. It is also found in China. Its local name is 'Dong Chong Xia Cao' which means summer grass winter worm. In China it was found only in a small area of Shanghai province.

It is described in Tibetan literature as the one with slender, short and bamboo shaped root. The root has worm like head body and legs with numerous thin and fine transverse wrinkles. Its lower part is thin and white, while upper part is slightly thicker from the collar of this solitary dark brown grassy stalk, which is thickened at the middle with slightly pointed tip and slender base. Around August, its roots decays naturally and disappears by the end of autumn and hence it is to be collected in June. *Cordyceps sinensis* produces unique and striking fruiting body in combination with larvae. The University of California, Agricultural Experimental Station referred it as a vegetable wasp plant worm.

Cordyceps sinensis has many unique features like it is sweet and acrid in taste and warm in nature. It also contains many bioactive compounds, which provide remarkable benefits for various age illnesses and strengthen their resistance to illness. It is a fungus that grows from the body of a caterpillar larva. The mycelium (which is the vegetative growth form of the organism) grows in the soil in these high, cold and arid mountainous areas. At a certain point in the life cycle, the mycelium finds the buried caterpillar, which is the larvae of the bat moth and colonizes it. The caterpillar becomes mummified by the growth of the mycelium and although it still looks like a caterpillar the mycelium then gets converted into a mushroom.

Occurrence

In Uttarakhand this precious medicinal mushroom is found in some areas like Chipla-Kedar near Narayan Ashram also known as Dev Bhoomi in one of the alpine zone of Dharchula range in the Pithoragarh district. Here, *Cordyceps sinensis* grows naturally. In this area it is known as 'Ghas Keera' or 'Yarchagumba'. The people of this area, after having come to know about its huge market demand are exporting this valuable mushroom illegally. In countries like Nepal, Tibet, China and Indonesia *Cordyceps sinensis* has been used

as tonic food and in religious ceremonies for centuries.

Medicinal Value

When Chinese practitioners came to know about this Tibetan wonder and used this knowledge with their own wisdom as tonic food. Chinese people believed that *Cordyceps sinensis* when boiled with pork, cure opium addiction and poisoning. Also the fungus is used to regulate and support the gonads and as a lung and kidney tonic recommended as a "for all illness tonic". It also improves stamina, energy, appetite, endurance and sleeping patterns. It is called Traditional Chinese Medicine (TCM). In our country its economic importance was realized for the first time about four years ago when Nepali and Tibetan traders paid @ 75000-80000/Kg. Some years ago for the first time Dr. S.S.Gabriyal's (IFS from FRI Dehradun) report were published in Indian Forester.

The medicinal properties of this mushroom are equally amazing. One of the highlight of this mushroom, new antibodies, are discovered recently. These antibodies are effective against T.B, Leprosy, Leukemia, Cancer, Asthma and other bronchial diseases.

It is a rich source of nutrients and nourishment. It improves blood cells viability and liner functions useful for Hepatitis. Clinical trials on 33 patients with Hepatitis showed 71.9% improvement on T.T.Test (Thymal Turbidity Test). In Cancer patients several clinical studies have been conducted in China and Japan. Its action is

evidently demonstrated against Cancer, Sars and HIV infection.

In 1957 Chinese Scientist determined the chemical constituents of *Cordyceps sinensis*. According to chemical analysis from Chinese Academy of Medical Science *Cordyceps sinensis* contains necessary amino acids for human body such as Asp., Thr., Ser., Glucose, Glycol, Calcium, Magnesium, Sodium and many vitamins. It is widely used both in clinical medicine and as household remedy. In "Compilation of Materia Medica" the great classic of Chinese Medicine, *Cordyceps sinensis* is described as an overall tonic to cure all illness. A Cordycepic acid ($C_7H_{12}O_6$) is isolated from *Cordyceps sinensis* and is very useful in molecular biology to block RNA synthesis. The first known written record of this herbal medicine was in the Ben Cao Cong Xen (New Compilation of Materia Medica) by the author Wu-Yiluo, written around the year 1757 AD during the Qing dynasty.

Scientific Study

Much of what is known about *Cordyceps sinensis*, we owe it to the research of Dr. George Halphern, a physician and professor at the University of Hong Kong and author of several books on *Cordyceps sinensis*.

Several scientific studies have demonstrated the benefits of *Cordyceps sinensis* like it improves Bio-energy, Status of human and probably animals, improve the internal balance mechanism and making efficient. *Cordyceps sinensis* improves the respiratory functions including Chronic

Bronchitis and genetic Asthma. It also increases cellular oxygen up to 40%. Numerous studies have demonstrated the benefits of *Cordyceps sinensis* on heart rhythm disturbances and chronic heart failure and helps in maintaining cholesterol. It also improves the Immune system as reported by Dr. Zhu at "Journal of Alternative and Complementary Medicine" 1999.

Recently a new compound is launched in the market showing great potential for the treatment of HIV infections called '**Immune Assist-247**'. This product is recently introduced to public by 'Aloha Medicinals Maui, Hawaii, made from beta glucans and other polysaccharides and immune-stimulant compounds extracted from *Cordyceps sinensis* and a rare compound extracted from Green tea. "We found an unexpected result when the patients infected by HIV virus use Immune Assist-247" stated John Halliday, Director of Research Aloha Medicinals. Now, large-scale clinical trial of Immune Assist-247 on HIV infected people starts in Ghana, South Africa. Aloha Medicinals, Hawaii is the largest producer of medicinal mushroom compounds in North America. Embarking on a project with the Govt. of China in the production of new class of anticancer drug derived from *Cordyceps sinensis*. Their development of new revolutionary methods for the hybridization and cultivation of *Cordyceps sinensis*. China and Japan have been successful in cultivating *Cordyceps sinensis* artificially, which has exactly the same characteristics like the natural *Cordyceps sinensis*.

Preservation & Cultivation

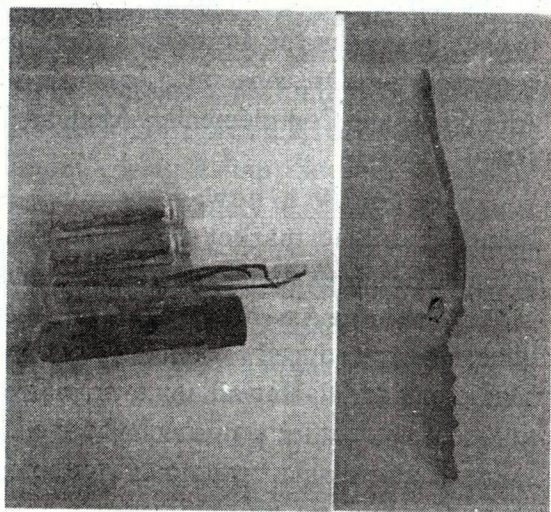
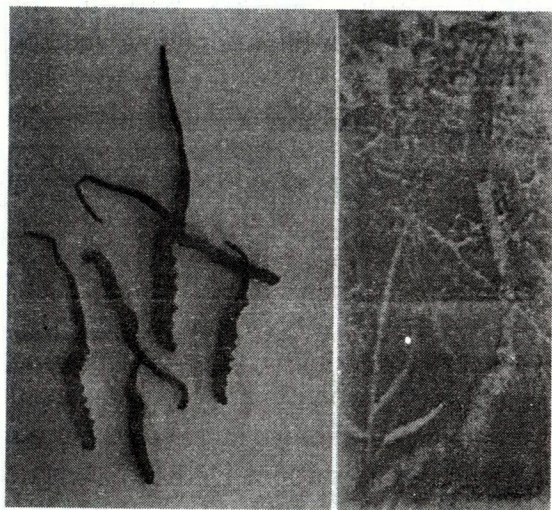
Cordyceps sinensis is being collected extensively from the higher Himalayas and its existence is threatened. Extraction activities are carried out from their natural habitats without any understanding to their depleting status in nature, resulting in decreasing their population. Therefore it is urgently needed to protect this mushroom and develop methods for the multiplication of this rare species in nature and mass cultivation under controlled conditions. If timely measures are not taken for the protection and conservation of this rare mushroom, it would soon become extinct. Now the Indian Scientists have shown keen interest in this high valued mushroom. DARL (Defense & Agricultural Research Lab) are keen to grow this fungus artificially owing to its strong medicinal properties.

For centuries in the orient this mushroom has been highly prized for its medicinal properties. It has been traditionally traded for its weight in silver. Almost four years ago, a team deputed by the Society for Human & Environment Development (SHED), Dehradun, committed to the preservation of biodiversity, visited the area. On this magnitude we found large scale extraction activities, man power and trading practices involved in the collection of this rare species and also interestingly found that there is a very big demand in the international market. None of the Indian herbal manufacturers are aware of this species. Whole lot of supply of this species

is being sent to China illegally and through informal trading channels since long.

However the importance of *Cordyceps sinensis* mushroom is its high

economic value, and its high therapeutic value have generated a lot of attention on the need of well established market for the product since long time.



Demographic Distribution and Management of Elephant : A review

*Dr. A.P. Chaudhary

India, harbors more than 50% of the wild elephant population (29190) and about 20% of the captive elephant population (3600) of Asia (Table-1). The Asian elephants (*Elephas maximus*) are associated with the religion, myths, historical and cultural values for centuries in the country. It also have its economic significance. Hence Asian elephants enjoy a special status in the country, as tiger is our National animal; but for almost all Indians elephant is the de-facto National animal (Bist et. al. 2002).

The history of domestication of Asian elephants based on rock painting might be about 6000B.C. (Choudhary, 1989). Although, Indus valley civilization (2500-1500 B.C.) suggest the presence of domesticated elephant in India. The ancient literature have various references about trained elephants, which is associated with Aryans who believed to have entered in India about 1500 B.C. and shows the

references of catching taming and training of elephants.

Distribution :

The available estimates of domesticated elephants in India were very high as these were used mostly for war. The Chandragupt Mourya had 9000 elephants. The Moghul emperor Akbar (1556-1605 A.D.) had 32000 elephants and emperor Jehangir (1605-1627 A.D.) had 113000 elephants in captivity (Bist et. al. 2002 *lo.cit.*).

At present the distribution of wild and domesticated elephants in India, shows that highest population was in Southern region (approx. 15773) and minimum was in the western region (approx. 92) with the total population of about 32790 (Table-2). The estimates of domesticated and wild elephants population in the different Asian countries suggested that, maximum population of elephants were in India (approx.)

Table-1 : Status of Domesticated and Wild-elephants in different countries.

Sr. No.	Country	Year	Number of Elephant		References
			Domestic	Wild	
1	Sri-Lanka	1994	3500	2000	Hendavitharana et al (1994)
2	Cambodia	1997	162	600	Dany et al (2002)
3	Malaysia	1999	36	1171	Daim (2002)
4	Myanmar	1999	4075	4000	Aung and Nyunt (2002)
5	India	2000	3600	29190	Bist et al (2002)
6	Thailand	2000	3800	1500	Singh (2002)
7	Sumatra	2000	362	2690	Hutadjulu and Janis (2002)
8	Nepal	2000	--	50	Kharel (2002) locit.
9	Vietnam	2000	165	114	Coung et al (2002)

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Table- 2: Status of Domesticated and Wild-Elephants in India during the year 2000-01.

Sr. No.	Country	State	Number of Elephants	
			Domesticated	Wild
1	North-Eastern	Assam, Arunachal Pradesh, Meghalaya, Nagaland, Tripura, Manipur, Mizoram	1903-1970	9475-9511
2	Eastern	Bihar, Jharkhand, Orissa, West-Bengal	209-240	2772
3	Northern	Uttar-Pradesh, Uttranchal, Delhi, Punjab, Rajasthan	271-300	1000-1984
4	Western	Gujarat, Maharashtra, Madhya-Pradesh, Goa, Dadra & Nagar-Haveli	79-92	-----
5	Southern	Andhra Pradesh, Karanataka, Kerala, Tamilnadu	860-920	14853
6	Islands	Andaman and Nicobar	78	40-70
	All India	Total	3400-3600	28140-29190

Source : Bist et al (2002 32790) followed by Myanmar (approx. 8075), Sri-Lanka (approx. 5500) and Thailand (approx. 5100) ; while minimum number were found in Nepal (Table-1).

Feeding Management :

The wild elephants use different feed stuffs available to them in the forest, while under captivity can consume about 100 to >200 kg. feed per day depending upon their age (COUNG *et al* 2002). However an elephant offered 200 kg. feed and 140 to 200 liters of water per day, can digest only 40% of it ; while he spent about 18 hours

per day for feeding (Prasob, 2002 and Schmidt, 1986). But, Mar (2002) suggested that a working elephant spent about 12 to 16 hours for foraging during working months.

According to Kharel (2002), an adult elephant shall be offered 80 to 100 kg. grass/fodder, 15 kg. of paddy, 15 kg. dry straw, 15 kg. Carrot, 1.5 kg pumpkin, 2.1 kg. Potato, 1.7 kg sugar, 0.05 kg. Salt and about 150 liters of drinking water. However Supryayogi *et al* (2002) ; Tantasuvan *et al* (2002) and COUNG *et al* (2002) suggested that elephant can consume tops of bamboo, coconut leaves, bananas

and banana stems, sugarcane, pineapple, papaya, king-grass, cucumber and mountain grass etc to satisfy their appetite.

released from work in the evening, into the pasture are often chained and feeding shall be limited.

Breeding Management :

(i) Reproductive traits : The breeding age of Asian elephant in Myanmar was reported as early as 8 years old ; but average breeding of cow elephant was from 18 to 55 years old (Aung and Nyunt, 2002). Mar (2002) reported that youngest age of calving was 6.8 years, while for captive born cow elephant, it was 16.69+6.22 years with gestation period of 20.61+0.49 months (Poole ,*et al* 1997). The age at first calving of cow elephants in India was reported from 18 to 20 years by Su-kumar (1989). According to Schmidt (1986) the earliest age at sexual maturity, estrous cycle and gestation period in Asian cow elephants were 6 years (under good nutritional condition); 4 months and 17 to 22 months respectively. Whereas, age at sexual maturity of bull elephant was 9 to 10 years under good nutritional conditions. The cow elephants exhibit estrous cycle during February to April and October to December (Coung, *et al*, 2002).

During estrous season bull elephants

(ii) Estrous Behaviour and Medication :

The behavioural changes in female were reported by Khawnual and Clarke (2002) such as decline the responsiveness to Mahouts and prefer the company of bulls, frequently smell the reproductive organs of other elephants, white vaginal discharge etc; while bull will sniff the vagina of a particular female more frequently and penis will begin to protrude after sniffing. But after approaching by bull, the cow elephant exhibit certain behavioural characteristics like widen the hind legs during sniffing, again turning to present rearward and increased tolerance of bull's attentiveness to this interest. Generally after onset of heat, cow elephant shall mate within 2 to 3 days.

During the period of estrous and pregnancy ; normal diet shall be offered, while 5000 mg of phosphorus- buffered calcium is administered three times per week after pregnancy is confirmed and more frequently as pregnancy progresses, to support the fetal bone formation.

Table- 3 : Calf mortality according their age

Sr. No.	Age at the time of death (Months)	Death of Male Calves	Death of Female Calves	Total Death
1	2	3	4	5
1	Still birth	43	53	96 (13.01)
2	< 7	91	96	187 (25.34)

1	2	3	4	5
3	7-12	28	30	58 (7.86)
4	13-14	58	91	149
5	25-36	26	33	59
6	37-48	20	25	45
7	49-60	25	35	60
8	> 60	31	51	82
9	Total	322	414	738*

Source : Mar (2002) ; *Two calves included of un-known sex.

Longevity and Mortality :

The data on longevity and mortality of wild and captive elephants reported by Mar (2002) shows that 738 calves (32.5%) born in captivity failed to attain the age of five years against the total calving of 2971 (96.72%) inclusive 96 (3.13%) still birth/abortion (Table-3). The maximum still births were reported among cow elephants those were 21 to 30 years old; while peak

calving rate was reported during 26 to 30 years of age (Table-4). He further suggested that main reason of neonatal death was low/deficit milk production or aglactia by cow elephants. In case of longevity of elephants, it was reported that over the age of 17 years, elephants were classified as full grown and can put into work force until they reach the retirement age of 55 years.

Table - 4 : Age Specific Calving rate and Still birth/Abortion during Parturition

Sr. No.	Age of Dam (Years)	Total Calves Born	No. of Live Births	No. of Still birth or Abortion Nil
1	2	3	4	5
1	< 10	12	12	Nil
2	11 - 15	105	100	5 (5.21)
3	16 - 20	347	336	11 (11.46)
4	21 - 25	539	522	17 (17.71)

1	2	3	4	20 (20.83)
5	26 - 30	562	542	5
6	31 - 35	453	440	13 (13.54)
7	36 - 40	382	369	13 (13.54)
8	41 - 45	294	287	7 (7.29)
9	46 - 50	209	203	6(6.25)
10	51 - 55	112	108	4 (4.17)
11	56 - 60	32	32	Nil
12	> 60	20	20	Nil
13	Total	3067	2971 (96.72)	96 (3.13)

Source : Mar (2002); Figures in parenthesis indicate the percent of still-birth/abortion.

Health Management :

The general care of the elephants included care of foot, teeth, digestive system, parasites and protection from the surrounding environment. However, care of foot and nails is very important, because overgrowth of sole, cuticle and nails may disrupt normal walking of the elephant. Hence these shall be given proper attention, such as regular trimming and special attention for nail-sole junction. Similarly, abnormally develop molar teeth cause poor mastication shall be cured by treating the animal. Some time animal rub the tusks on bars or sleep on the same side may wear down the ivory of a particular area or tusks may be broken or cracked or ivory cavity (pulp cavity/root canal) may become weak, which may be a distress or loss of the entire tusk.

The another important management

problem is caused by changing in diet or by over eating by elephant who is colic, which shall be avoided by adopting a proper feeding regime. Similarly the problem of anemia, heat stroke, parasites and different bacterial, viral and protozoan diseases shall be controlled by maintaining the animals under hygienic condition with ideal management.

Restraining :

The successful restraining of any elephant is depends upon their training like lifting feet onto spindles ; while for capturing "Pit-Method" and "Noosing" from the back was most popular in Southern India (Bist *et al*, 2002). The use of hydraulic crush or squeeze cage for bull elephant is also a safe method of restraining (Schmidt, 1986). Some Mahouts use a hook, which have a sharply pointed object for restraining

and is directed for walking the elephants. In case of chemical restraining, elephants shall never be restrained in the ponds or river water.

Utility :

The elephants are used for various purposes in different countries as suggested by Jayewardene (2002) ; Bouleuam (2002) ; Prasorb (2002) and Bist *et al* (2002). Trekking show, demonstration/exhibition. Logging industry and transport of goods. Clear land for crop production/agricultural purposes.

To rides in the zoo and safari.

Bamboo rafting

Religious processions and ceremony.

To carry building materials.

Military purposes.

Draughability :

The adult elephant can be used for

work from 5 to 8 hours per day and on an average they are put to work for five days per week ; seven working months per year Mar (2002). While their walking speed was reported about 4 km. per hour by Viroj and Sawai (2002) and Aung and Nyunt (2002). The working capacity depends upon the weather, dragging path, topography, health, size of the logs and quality and quantity of fodder and water available for them. They further reported that trained calvel of 5 to 15 years old can be used for transporting personal equipment of the staff involved in timber operations. They further suggested that maximum traveling limits of elephants were 25 km. per day (in plain areas) and 16 km. Per day (in mountainous path). While their loading capacity depends upon its age like : 18 to 14 years old for light dragging work; 25 to 45 years old for full work ; 46 to 55 years old working capacity declines ; 56 to 60 years old used for light work and after 60 years of age they become retired.

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Conservation of some valuable medicinal and aromatic plants in Uttarakhand

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Abstract

Uttarakhand state is a rich repository having large number of medicinal and aromatic plants. The therapeutic value of some of these plants are given in our ancient Hindu scriptures. In recent years, man and his livestock have been greatly changing the face of the ecosystem. At present, my article deals with the exploitation of ninety one valuable medicinal and aromatic plants, found in the Uttarakhand and it is feared that if biotic pressure on land and resources continue, then there is possibility of extinction of these valuable plants from the natural habitats. It is, therefore, a compelling obligation on the society that this valuable treasure responsible for our health and longevity is protected, replenished and sustainably used for socio-economic development of people.

Introduction

Geographically, Uttarakhand state lies between the 28°42' N to 31° 28' N latitude and 70°35' E to 81° 0' E longitude and it covers a total geographical area of 53,483 sq.km., from where the sacred rivers Ganga and Yamuna originate, is home of some of the holiest shrines. The total population of state was 84, 79, 562 (Census of India, 2001). Mostly, people live in the valleys and on the slopes of hills in close association. Administratively, the state comprises of thirteen districts, (SFR,2001).

The state has diverse topography, altitude, climatic conditions and the heterogeneous environment (Katiyar, 2003). Its unique ecosystem has the store of immense forest wealth. The change in flora and fauna is due to the variation in the local soils, rock types, climatic conditions, etc. According to SFR 2001, the Uttarakhand state has 64.81 percent recorded forest area, the state ranks sixth amongst states and Union territories in India. Around and in the forest areas, a large number of valuable medicinal and aromatic plants are growing naturally from the low to high altitude and are able to fulfill the needs of local inhabitants and others alike.

Lots of information about medicinal plants are available in our ancient literatures (Joseph and Swaminathan, 1987). In fact, plants provided safe and effective drugs and no harmful side effects like those in modern synthetic drugs and antibiotics (Aswal, 1993). The plant materials required is collected from the natural sources. If such heavy gathering and destruction of these valuable plants are continued, the time is not far when these plants will become scarce or disappear from their natural habitats (Choudhary et.al., 2005). In Uttarakhand state, ninety one valuable medicinal and aromatic plants have come into light so far. They are over-exploited for sale or other purposes and thus causes serious threat to the survival in their natural habitats. The

tree, shrub, herb and climber number is 14, 13, 55 and 9, respectively. All available plant species are arranged in alphabetical order with their local and family name followed by their plant part used and is presented in a table form for clear cut understanding. Simultaneously, star symbol is given for those plant species which have become threatened and is disappearing due to rapid use. It is urgently needed to formulate definite strategy to regulate their exploitation and *in-situ* cultivation for the supply of raw material to industries and other uses, besides, maintaining the ecological balance in the state. The author suggests some important points for the conservation of medicinal and aromatic plant wealth in the Uttarakhand, which may be helpful for socio-economic development of local people.

Conservation

1. In general, forest is the home of medicinal and aromatic plants. Their conservation is vital because they not only supply the essential raw material for industries but on the environmental front, they help to preserve the basic resource like soil and water, prevent the thin, loose soil cover on steep mountain slopes from being washed away and help rejuvenating the streams.

2. Frequent fires in the forest areas annually not only destroy the botanical wealth but also burn the upper surface of forest soil, altering the water flow. Thus, the stream flows and under ground water supplies are influenced. It is, therefore, necessary to protect these botanical wealth of forest

against damage by fires.

3. Continuous grazing of the areas alters the natural habitat of medicinal and aromatic plants and their struggle for life, reaches at the verge of extinction. In such areas, grazing is to be prohibited completely and the benefits are to be explained to the villagers regarding these valuable plants and they should be motivated to stallfeed their cattle.

4. Unmindful collection of medicinal and aromatic plants from natural habitats leads to devastation. Such collection should not be completely banned but it is to be done by scientific manner that least destroy the natural habitat of plants. Simultaneously, systematic survey of these valuable plants should be done at stipulated time frame to determine the status of these plants.

5. Medicinal and aromatic plant cultivation practices are essential as otherwise the existing natural population of these plants will not be sufficient for wider use. Farmers should be encouraged to take up cultivation of valuable plants which will be an additional source of income to the farmers. It's popularity among the farmers community of the state will depend on the amount and effectiveness of extension work done by the Govt. The extension agencies should provide available technical know-how to the farmers. In order to attain high productivity, inputs like irrigation, biofertilizers, biocontrol of plant diseases should be used at appropriate time.

6. Marketing facilities should be provided to the medicinal and aromatic plant growers in the villages with support price and agro-processing centres within the reach of the

growers. The marketability of products will be a crucial factor in determining the failure or success of this sector.

7. Awareness and proper training programme on cultivation, preservation, processing and contractual farming of all these herbal produce should be tied with the pharmaceutical and cosmetics producing industries. Monitoring the process by technical expert committee will be necessary which would be able to suggest the modifications from time to time based on experience.

8. Community organizations need to adopt sustainable collection and management practices on public lands. Collection, drying and storage of medicinal and aromatic plants must ensure the purity and safety against microbial contamination and quality deterioration. It is, an urgency to establish a State Drug Testing Laboratory to check the quality and standard of ayurvedic medicines.

9. The State Government should establish medicinal and aromatic plant gardens at different agro-climatic zones in the state for conservation, propagation for perpetuation and scientific investigation of these plants.

10. Some important valleys of state very

rich in medicinal plant wealth, should be declared as reserves or medicinal plant sanctuaries. There is an essential need of setting up a pharmaceutical unit to produce herbs into medicines and also provide the marketing opportunities.

11. Mountaineering and tourism should be strictly restricted and it should be banned in important valleys with rich medicinal and aromatic plant heritage.

12. Efforts should be made to discover more potent plant drugs in the Uttarakhand state.

Conclusion

Overall, the medicinal and aromatic plants conservation and cultivation practices can be viewed as a possible bridge between suitable economic development and affordable healthcare as well as save the herbal biodiversity in the state.

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Table 1: Some important medicinal and aromatic plants are found in Uttarakhand

	S.No.	Botanical Name	Local Name	Family	Plant Part Used
Tree	1	<i>Acacia catechu</i> , Brand.	Khair	Leguminosae	Stem bark
*	2	<i>Aegle marmelos</i> , Corr.	Bel	Rutaceae	Fruit, Root bark
	3	<i>Boswellia serrata</i> , Roxb.	Salai	Burseraceae	Gum
	4	<i>Cinnamomum tamala</i> , Fr. Nees.	Tejpat	Lauraceae	Bark
	5	<i>Crateva adansonii</i> , Linn.	Varna	Capparidaceae	Stem Bark
	6	<i>Litsea chinensis</i> , Lamk.	Meda Lakdi	Lauraceae	Stem bark
*	7	<i>Myrica esculenta</i> , Ham.	Kaphal	Myricaceae	Stem bark
	8	<i>Oroxylum indicum</i> , Vent	Syonak	Bignoniaceae	Seed
	9	<i>Phyllanthus emblica</i> , Linn.	Avala	Euphorbiaceae	Fruit
	10	<i>Pistacia khinjuk</i> , Stocks.	Kakar	Anacardiaceae	Leat galls
	11	<i>Semecarpus anacardium</i> , Linn.	Bhilava	Anacardiaceae	Seed
*	12	<i>Taxus wallichiana</i> , Zucc.	Thuner	Taxaceae	Stem bark, leaf
	13	<i>Terminalia belirica</i> , W. & A.	Bahera	Combretaceae	Fruit
	14	<i>Terminalia chebula</i> , Retz.	Harar	Combretaceae	Fruit
Shrub	1	<i>Artemisia maritima</i> , Linn.	Pati	Compositae	Leaf
*	2	<i>Asparagus adscendens</i> , Roxb.	Satmul	Liliaceae	Root
*	3	<i>Asparagus racemosus</i> , Wild	Satavar	Liliaceae	Root
*	4	<i>Barberis aristata</i> , D.C.	Kilmora	Berberidaceae	Root
	5	<i>Dictamnus albus</i> , Linn.	Burjhang	Rutaceae	Whole plant
	6	<i>Embelia tsjeriam-cottam</i> , A.DC.	Baibidang	Myrsinaceae	Leaf, Seed
*	7	<i>Ephedra gerardiana</i> , Wall.	Somlata	Gnetaceae	Stem
	8	<i>Hyssopus officinalis</i> , Linn.	Jupha	Labiatae	Whole plant
	9	<i>Juglans regia</i> , Linn.	Akhrot	Juglandaceae	Root bark
*	10	<i>Rauwolfia serpentina</i> , Benth.	Sarpagandha	Apocynaceae	Root
	11	<i>Skimmia laureola</i> , H.k.f.	Kadarpati	Rutaceae	Leaf
	12	<i>Woodfordia fruticosa</i> , Kurz.	Dhaura	Lythraceae	Stem bark
*	13	<i>Zanthoxylum armatum</i> , Roxb.	Timur	Rutaceae	Seed
Herb	1	<i>Aconitum balfourii</i> , Stapf.	Meetha	Ranunculaceae	Rhizome
*	2	<i>Aconitum heterophyllum</i> , Wall.	Atees	Ranunculaceae	Rhizome
	3	<i>Aconitum violaceum</i> , Jacq. Ex.	Duth-Atees	Ranunculaceae	Rhizome
*	4	<i>Acorus calamus</i> , Linn.	Vach	Araceae	Root, Rhizome
	5	<i>Ajuga bracteosa</i> , Wall.	Ratpati	Lamiaceae	Leaf
	6	<i>Allium humile</i> , Kunth.	Jamboo	Lauraceae	Leaf

	7	<i>Allium stracheyi</i> , Baker.	Faran	Lauraceae	Leaf
	8	<i>Andrographis paniculata</i> , Nees.	Kalmegh	Acanthaceae	Whole plant
*	9	<i>Angelica glauca</i> , Edgew.	Chora	Apiaceae	Root
	10	<i>Arenaria benthami</i> , Wall.	Ratanjot	Boraginaceae	Root
*	11	<i>Azanza lampas</i> , Alef.	Kapasi	Malvaceae	Seed
	12	<i>Bacopa monnieri</i> (L.) Pennell.	Brahmi	Scrophulariaceae	Leaf
*	13	<i>Bergenia ciliata</i> , Haw.	Pasanbhed	Saxitragaceae	Rhizome
	14	<i>Bergenia stracheyi</i> , Hk.f. & Th.	Pasanbhed	Saxitragaceae	Rhizome
*	15	<i>Boerhavia diffusa</i> Linn.	Punarnava	Nyctaginaceae	Leaf
	16	<i>Carum carvi</i> , Linn.	Kalajeera	Apiaceae	Seed, Fruit
*	17	<i>Centella asiatica</i> , Linn.	Brahmi	Apiaceae	Leaf
*	18	<i>Chaerophyllum villosum</i> , Wall.	Ginjiri	Apiaceae	Root
	19	<i>Coleus barbatus</i> , Benth.	Patterchur	Lamiaceae	Root
	20	<i>Costus speciosus</i> , Sm.	Kavkand	Zingiberaceae	Root
	21	<i>Curculigo orchoides</i> , Gaertn.	Kali Musli	Hypoxidaceae	Root
*	22	<i>Dactylorhiza hatagirea</i> , D.Don.	Salampanja	Orchidaceae	Rhizome
	23	<i>Delphinium denudatum</i> , Wall.	Nirbisi	Ranunculaceae	Root
*	24	<i>Didymocarpus pedicellata</i> , Br.	Patthar long	Gesneriaceae	Whole plant
	25	<i>Datisca cannabina</i> , Linn.	Burjhang	Datisceae	Root
	26	<i>Ferula jaeschkeana</i> , Vatke.	Jangli heeng	Apiaceae	Latex
	27	<i>Fritillaria roylei</i> , Hook.	Chher-kakoli	Liliaceae	Root
	28	<i>Gentiana kurroo</i> , Royle	Kanvi-trayman	Gentianaceae	Whole plant
	29	<i>Gloriosa superba</i> , Linn.	Kalihari	Liliaceae	Rhizome
	30	<i>Habenaria intermedia</i> , D.Don.	Ridhi	Orchidaceae	Whole plant, Tuber
	31	<i>Hedychium spicatum</i> , Ham.	Kapoor-kachari	Zingiberaceae	Root
*	32	<i>Houttuynia cordata</i> , Thunb.	Dhap	Saururaceae	Whole plant
	33	<i>Hyoscyamus niger</i> , Linn.	Khursani	Solanaceae	Seed
	34	<i>Hypericum perforatum</i> , Linn.	ajwain	Apocynaceae	Whole plant
	35	<i>Jurinea dolomiaea</i> , Boiss.	Basanti	Compositae	Root
*	36	<i>Justicia adhatoda</i> , Linn.	Dhoop	Acanthaceae	Leaf
	37	<i>Malaxis muscifera</i> , Sm.	Vasa	Orchidaceae	Whole plant
	38	<i>Megacarpaea polyandra</i> , Benth.	Jeevak	Cruciferae	Root
	39	<i>Nardostachys grandiflora</i> , DC.	Barmol	Valerianaceae	Rhizome
*	40	<i>Nicandra physaloides</i> , Gaertn.	Jatamansi	Solanaceae	Leaf
	41	<i>Paris polyphylla</i> , Sm.	NA	Liliaceae	Root

42	<i>Phyllanthus niruri</i> , Wall.	Satva	Euphorbiaceae	Whole plant
43	<i>Picrorhiza kurroa</i> , Benth.	Bhui Amla	Scrophulariaceae	Rhizome, Root
44	<i>Pleurospermum angelicoides</i> , Benth.	Kutki	Apiaceae	Root
45	<i>Plumbago zeylanica</i> , Linn.	Lasora	Flumbaginaceae	Whole plant
46	<i>Podophyllum hexandrum</i> , Royle.	Chitrak	Berberidaceae	Root
*	47 <i>Polygonatum verticillatum</i> , Allioni.	Ban Kakri	Liliaceae	Root
*	48 <i>Rheum australe</i> , D. Don.	Maha-Meda	Polygonaceae	Root
*	49 <i>Selinum tenuifolium</i> , Wall.	Archa Dolu	Umbeliferae	Root
50	<i>Solanum xanthocarpum</i> , Schrad.	Bhutkeshi	Solanaceae	Seed
51	<i>Swertia chirata</i> , Ham.	Kathkari	Gentianaceae	Panchang
52	<i>Tagetes minuta</i> , Linn.	Chiraita	Asteraceae	Leaf, Flower
53	<i>Thalictrum foliolosum</i> , Dc.	Vanphool	Ranunculaceae	Root
*	54 <i>Valeriana jatamansi</i> , Wall.	Mameri	Valerianaceae	Root
*	55 <i>Viola canescens</i> , Wall.	Sameva	Violaceae	Flower
1	<i>Abrus precatorius</i> , Linn.	Banapsa	Fabaceae	Seed
Order 2	<i>Celastrus paniculus</i> , Wild	Ratti	Celastraceae	Stem
3	<i>Dioscorea deltoidea</i> , Wall.	Mal-kandhani	Dioscoreaceae	Stem
4	<i>Mucuna prurita</i> , Hook.	Gethi	Fabaceae	Seed
5	<i>Pueraria tuberosa</i> , Dc.	Kounch	Fabaceae	Rhizome
6	<i>Rubia manjista</i> , Roxb.	Sirala	Rosaceae	Leaf
7	<i>Tinospora malabarica</i> , Miers.	Majeti	Menispermaceae	Stem
8	<i>Trichosanthes tricuspidata</i> , Miq.	Giloy	Cucurbitaceae	Fruit
9	<i>Vallis solanacea</i> , Kuntze.	Indariyani	Apocynaceae	Leaf
		Dudhibel		

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From the Archives of "Cheetal"

Destruction of Mahseer in the Doon Valley

*S.Gurukirat Singh Mann.

Very large amounts of money are spent in other countries of the world in stocking rivers with fry of sporting fish, but alas! Here in our country, where rivers naturally contain the Mahseer, next only to the salmon in sport and value, we cannot preserve what nature itself has planted in our rivers, leave alone adding fry at fabulous cost.

Due to lack of control and due to utter ignorance of villagers and local fishermen, the mahseer is so shamelessly exploited that the species will soon be exterminated and one would soon have to go to an aquarium to see a mahseer. What else can happen when even spawning waters are bombed or blasted, poisoned or diverted and fish are collected, after drying the beds of streams where they spawn and where the little ones were to grow thus ending their life cycle.

To give an illustration, if people think fish to be a commodity which is naturally to be used as food by the population, but at the same time it is not protected and efforts at propagation are not made, then what would happen to it? When even agricultural produce cannot keep pace with the needs of the population, inspite of all resources and efforts of the Government, then, how can fish remain or multiply in face of no Government efforts and of mass

exploitation?

In the Doon valley the devil's own contrivances are used to destroy fish, These are used not to catch fish for sport or for the pot but for wholesale destruction. Some of these methods, I mention below.

In the Aglar nadi at Senji, below Mussorie, a large number of local people gather with the first heavy shower in July, for what is known as the Mach ka Mela! When fish come up laden with eggs to spawn, nature forcing them to go into these small streams to deposit their offspring which could not have survived in big rivers, where they would have been eaten up by other fish, tortoises etc. the local people collect a type of weed which they burn into ashes and throw into the water. These ashes are deadly poison for fish and their spawn. In a few minutes hundreds of big and small fish float dead in the water: some of these the local people take home and the rest are carried away by the stream to utter destruction. This is the first attack on fish-breeding. Then come dead-liner, night-lines, nets and explosives. Whatever is left over of later migratinos of fish is destroyed by the villagers in these mountain streams when the water goes down by erecting barriers of thorn and wood through which the fish cannot pass to go down to the main rivers after breeding. They are then easily

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killed with stones and sticks and even guns or by drying and diverting the water.

This happens in varying degree in all hill streams and when whatever is left of the fish come down into the lower rivers, these are disposed off by villagers and others with explosives, small-mesh nets etc. through which the smallest fish cannot pass.

There does not appear to be any law that applies to the stretches of streams which are outside the reserved forests. These streams are controlled by the Gram panchayats who lease them out to contractors for fishing. It is not known if these contractors are under any restrictions as regards size of mesh for their nets, season of fishing etc. Where there are any special fisheries departments, as in Himachal Pradesh and the Punjab, there is control in these matters and special staff to prevent fishing without permits and to control illegal practises, fishing in the close season etc. A friend of mine recently visited the Giri River near Solon, and found fishing guards on both banks of this river one in H.P. and the other in Punjab territory, which passes through non-reserve areas at this point, Presumably the Gram Panchayats were functioning here as well, yet persons were fishing with rod and line under the control of the fisheries department. There is a similar department in the U.P., yet they do not appear to have any control over similar areas in that State and the result is wholesale destruction of fish in waters outside the reserved forests.

To prevent the above, the U.P. Government should protect the fish of the

rivers, as in the Punjab, as a national possession. Even if under the new Gram Panchayat system the villagers have the right to the fish in rivers which pass through their areas, surely the fishing should be done with due regard to close seasons and rational methods, which will ensure the perpetuation of stock. Further, stretches of the rivers should be preserved for rod and line fishing only, for sportsmen and tourists, and if any local fishing associations or societies wish to protect rivers and conserve and increase fish stocks through their own efforts, they should be encouraged to do so.

Bombing, poisoning and netting should be made cognizable offences and deterrent punishments awarded to law breakers. The civil, police and forest staff should be empowered to intercept offenders under rules of suitable fishing legislation and especially under the Explosives Act as regards bombing of rivers.

At present the situation as regards fishing and fish-destruction in the sub-montane tracts of the U.P. is a typical instance of 'nobody's business' except in the waters passing through the reserved forests, where there is some semblance of control through the forest department. For instance, it was heartening to find on my recent visit to the Song river at Sat Narain that a member of the staff of the game branch of the forest department had hauled up several unauthorized people netting fish in the reserve area. If this interest could be kept up and extended by the Government to the non-reserve areas, there are good hopes of fish propagation.

Cheetal

Quarterly News

Successful Exhibition Organised at Chandigarh

Wildlife Preservation Society of India organised a Wildlife Photo Exhibition at Chandigarh from 2nd to 4th December 2006. Main attraction of the Exhibition were the Wildlife Photographs by Mr Rajeev Raj Mehta, a life member of the Society, member Wildlife Advisory Board, Uttaranchal and a keen nature Photographer and conservationist from Haridwar. He recently covered Changthang Wildlife Sanctuary & other areas of Ladakh & captured unique landscapes of the area many of which were also displayed at the exhibition. The exhibition was inaugurated by Lt. Gen (Rtd) Baljit Singh a hardcore conservationist, responsible to introduce conservation culture in Armed Forces and good writer on wildlife & nature conservation. Among many people from Chandigarh & Panchkula to witness the exhibition, the prominent persons were Dr. Jakati Chief Wildlife Warden of Haryana, PCCF Punjab, CCF HQR Punjab, Dy Chief Wildlife Warden Haryana, DIG Punjab Police & other officers of Forest & Police departments of Punjab & Haryana. The exhibition attracted the print media & all important news papers covered it with great appreciation for the effort. The venue of the exhibition was chosen in the capital city of Punjab because the Wildlife Preservation Society of India got inspiration & Support from H H col Maharaja Sir Pratap Singh Malvendra Bahadur KCSI, Maharaja of Nabha, right since its inception



■ आर्ट फोलियो में राजीव राय मेहता अपनी फोटोज के साथ। - सुनील शर्मा



■ एक्जीबिशन के लिए शहर में आनंद सिंह नेगी।

Search For Himalayan Quail Continues

A Project for rediscovery of Himalayan Quail *Ophryses superciliosa* to be undertaken by Wildlife Preservation Society of India with financial support from WWF- India, technical support from Wildlife Institute of India & field support by Director Rajaji National Park & DFO Nainital Forest Division was submitted to Chief Wildlife Warden Uttaranchal for approval. The sites for rediscovery have been chosen as Binog Wildlife Sanctuary & surrounding areas & certain areas of Nainital Forest Division, which have been recommended by WII as most prospective sites where Himalayan Quail could be found. The project involves use of mistnet & leg traps to capture the bird for study. CWLW Uttaranchal has referred the project to Govt of India. Meanwhile a team of 4 local people having good field knowledge were engaged with the help of local

staff of Binog WLS during last two months who observed the bird at different places & also collected the feathers from different parts of the sanctuary. The feathers have been sent to BNHS for identification. Field observations have so far not indicated the presence of the bird in the study area.

More members enrolled

The enthusiasm to join Wildlife Preservation Society of India continued & the following members joined the Society during this quarter.

S No.	Name	Address	Type of Membership
1	Dr. Pratibha	8/174 Sector III Rajendra Nagar, Shahibabad Gaziabad UP	Lifemember
2	Sh. Tej Pratap Singh	13/14 Windsor Mansion, Janpath Lane, New Delhi	„
3	Sh. Indra Pratap Singh	13/14 Windsor Mansion, Janpath Lane, New Delhi	„
4	Col. Rajendra Singh	271 Orkar Road, Dehradun	Annual Member
5	Varun Jagga	6 Anand nagar, House No 551 Near BD Adarsh Senior Secondary School, Abohar, Punjab	Student Member
6	Master Manik Kalra	House No. 405, Karora Road Naya Gaon, Chandigarh	Student Member (Youngest Member 11 years of age)
7	Jims Jungle Retreat	Vill. & P.O. Dhela, Ramnagar Nainital	Institutional Member.

BOOK REVIEW

TITLE :-	The forest of the Buddha
AUTHORS :-	Bulu Imam and Philip Carter
Publisher :-	Sanskriti Publishing, Dipugarha, P.O. Hazaribagh Pin. 825301, Jharkand State, India
Price :-	Not Mentioned

Comments :- This is an account of an international campaign in which environmentalists, human rights organizations and cultural heritage activists joined together to save a special part of earth's heritage. In particular, it is the place where 2400 years ago, the man who became known as sakyamuni's, the sage of the Sakya clan, wandered and taught about the environment and conservation of nature. Sakyamuni's teaching has formed the basis of civilizations from India to Japan, and at present, it is of profound relevance to the emerging culture of which the environment is a part.

The Forest of the Buddha is one of the most significant places in the world today. It is of unique

importance ecologically, spiritually, and in simple human terms of the tribal People who live there, whose ancient culture and way of life are threatened.

The entitled book is written by two environmental journalists, Bulu Imam is an Indian and Philip Carfer is of Canadian origin, now lives in Japan. The book contains four chapters and part-I and Part-II, the introductory notes are written by Bulu Imam and Philip Carter respectively. Booth have described the teachings of Lord Buddha who lived years back in Jharkhand (India), about environmental conservation especially the protection of forests. This is an excellent effort to trace back & highlight the rich Indian culture, which valued conservation as a way of life. The authors deserve commendation.

Editors

Note: One of the authors, Mr. Bullu Imam is a member of Wildlife Preservation Society of India

If Tomorrow Comes

The tiger is extinct in Sariska. Nor is Sariska an isolated tragedy, but an indicator of the problems that plague the beleaguered national animal and its habitat. It was in early march of this year that the tiger crisis caught the attention of our Prime Minister, Dr Manmohan Singh. He expressed his concern, wrote to the Rajasthan Chief Minister, Vasundhara Raje to look into the matter, ordered a CBI enquiry into the Sariska catastrophe, set up a Tiger Task Force to look into the current crisis and arrive at effective solutions. He even made a hurried trip to Ranthambhore.

Great, isn't it? Remarkable that the highest office in India has deigned, finally, to respond to the tiger tragedy. Why, then, does despair still persist? Why is it there a deep conviction that today, more than ever, there is little hope for the tiger? Why then is a sense of impending doom is greater than ever? So, what has really happened since the PM acted in response to the crisis? Not much, really. The Sariska CBI report is ready, they have the names of the big guys and the culprits responsible for killing the tigers in Sariska. But they cannot make arrests because the Rajasthan government is yet to transfer the case to the CBI.

Meanwhile, investigations show that the poachers are not resting easy, they have shifted base to other tiger areas, notably in Madhya Pradesh, Maharashtra and other southern states. Let us not forget too, that Sariska is just one tiger reserve from a list of 28, where poaching is a severe a problem. Numbers have fallen drastically in Ranthambhore, they are missing in Panna, and Bandhavgarh has seen a recent spate of tiger deaths. There has been no sign of the tiger in Buxa for the past year, Dampha is a similar story and no one knows the fate of the tiger in Nagarjunasagar and Indravati, which are ruled by naxalites. One does not know that if the tigers of Namdapha have survived traditional hunters. Some of the above habitats have gone the way of Sariska way, while others are following at an alarming rate.

If only we would remove our blinkers and acknowledge the crisis. The government essentially disagrees that a tiger calamity exists, and even if they are right, the tigers must get the benefit of doubt, and therefore protection. Tiger numbers are just too fragile, and the habitats far too vulnerable to permit any laxity. In the past ten years, the total poaching cases are manifold the figure of 249 tigers being poached in five years, given out by the Ministry. Wherever there are tigers, there are poachers, and the sooner we act on this assumption, the sooner we can hope to protect the tiger. Why, then, has not the CBI been given a national mandate to investigate

poaching and the illegal trade in wildlife? Why is it that even at the face of such horrific continuing massacre, The National Wildlife Crime Prevention and Control Bureau is still gathering dust? Yes, we know that it exists and that orders were issued that it must be activated in the National Board for Wildlife meeting chaired by the PM on March 17. Well, it just hasn't happened.

Monsoon is the most vulnerable period for tigers, parks are closed during this season and protection becomes exceedingly difficult since the rains wash away the roads, making accessibility difficult. As it is the forest department operates with a shortage of upto one-third of its staff, which is both aging and ill-equipped. It is the monsoons when poachers strike the most, therefore the need to deploy additional forces, be it home guards or police, cannot be stressed enough. But the rains have now arrived, and aside from Ranthambhore no park has been given extra protection. One shudders to think of the scenario, post monsoon. According to Project Tiger estimates, nearly 60 per cent of the tiger population lives outside the reserves. Given the state of the tigers inside the reserves, one despairs of their fate once they cross the protected boundaries. A close look at the death figures show that much of the poaching occurs outside the reserves. A radio-collared tiger, "120", died an agonizing death in a poacher's noose just outside the boundaries of Panna, while a tigress with her three cubs were poisoned outside Tadoba, and "B1 and B2", were killed outside the precincts of Bandhavgarh. Shri Bhardwaj, Deputy Director of Ranthambhore says that once the tigers leave the reserve, it is akin to walking into a death trap. He is right, the Keola Devi sanctuary adjoining the reserve has also lost all the six tigers that the last census showed. Tigers outside protected areas, or even in forests not carrying the tiger reserve tag have absolutely no protection. None what so ever. Moreover, such 'outsiders' are thrown into sharp conflict with man. Outside sanctuaries, the natural prey base is minimal. As the recent Mansoor Ali Khan Pataudi case has shown, hunting of deer and other creatures is carried on with impunity. With no natural prey to feed on, the tiger must assuage his hunger with livestock. Irate farmers avenge loss of their cattle by poisoning or electrocuting straying tigers.

Nor will protection alone safeguard the tiger. The tiger's habitat is rapidly shrinking and degrading by the day. Most of our reserves today are fragmented islands with tiny tiger populations. Take Ranthambhore as an example. With a core area of little over 300 sq kms it hosts anywhere between 20 to 40 (depends on whom you want to believe, the NGOs who say the numbers have dipped or the optimistic official census) tigers. The reserve is like an island surrounded by enormous populations of people and cattle. Besides the problem of illegal cattle grazing inside, such a segregated population leads to inbreeding. This isolation from other tiger habitats ensures that there is no induction fresh blood. Inbreeding translates to lower sperm count, higher infant mortality rate and a population prone to disease. A more immediate worry is that such patchwork forests allow little space for tigers. Tigers are territorial animals, and the male needs anything between 30 to over 200 kms depending on sufficient prey base and the availability of females for future progeny. Even as tigresses breed within the reserves, once the cubs, especially the males, grow up they need to carve their own territories. But there is just no place for them. Territorial fights increase between the 'challenger' and the existing dominant tiger, and while this is natural behaviour such mortalities increase due to lack of space. The cubs also stray outside the reserve for want of space and fall prey to poachers or succumb to a conflict situation. It is essential therefore to protect not just isolated reserves, but also ensure at least some contiguous habitats as for example in the Terai region, which has the protected areas of Dudhwa, Corbett and Rajaji, though corridors connecting these forests, even though are highly fragmented and degraded.

A recent study by the Forest Research Institute shows that tiger reserves in India have lost over 200 sq kms of habitat and records an alarming trend of fragmentation. While this may be a small percentage of the total...sq kms, the trend is ominous. Will the PM's interventions save the tiger? How can one believe that if the same office, which declares concern for our national animal, pushes a bill that will redistribute the tiger's habitat to people, effectively killing any chance of the tigers' survival? There has been much controversy surrounding the Schedule Tribe Recognition of Forests Rights Bill, 2005, I will stress on just a few points. Once forests lands come under private ownership as the bill proposes, the land mafia will move in. It is a moot point whether tribals will benefit. Why do we want to keep the tribal at subsistence levels and not give them the fruits of development? Unfortunately, the advent of civilization into wilderness has shown that the symbiotic relationship between forests and tribals is a myth. The day of the 'hunter-gatherer' tribals, except in rare cases like the Sentinels in Andamans are over, they have been exposed to the consumer mania, but lack the wherewithal to avail of the goodies. Opening up of the forest, land, trees, timber, forest produce, without no law enforcement in place will simply lead to exploitation, and ultimate death of the forest. In our typical hasty shortsightedness, we will grant the land to the tribal to gain votes, he in turn will kill his forest for quick gain. And if the forest goes, the tribal, and a way of live, goes too. Not to mention the tiger.

And where will it all stop? If tribals get ownership of a village say, in Melghat Tiger Reserve, where will their children go to school? Will they not want electricity? How about hospitals? Do they not have the right to better communication and roads to better medical facilities etc? Will we provide for these? If not, what happens to the 'historical injustice' that the government wants to rectify? If yes, will someone please explain that a forest does not remain a forest once such development takes over. It starts as a village, and then develops into a town that ultimately morphs into an urban center. A cub needs his forest and a healthy prey base if he is to become a tiger, not a school.

Then there is the Tiger Task Force. Well intended, but clearly marked with agenda. In a recent meeting at Nagpur, the force steered clear of the subject of tiger conservation. The focus of the meeting was how tribals could use forests, how they could acquire land and other rights over the tiger's habitat. Which, after all, the chairperson was to explain later, is the purpose of forests. The task force has effectively divided people into tribal vs. tiger, people vs. tiger, wildifers vs. people's rights. It is not so. Local people must be involved in conservation, they have always enjoyed rights to minor forest produce for sustenance and must continue to do so. Any wildlifer will be the first to admit that in India the issue of people and wildlife can not to be isolated. However, it is best not to wear rose-tinted glasses and romanticize the tribal-forest relationship. Modern day pressures have meant that tribals seek more than mere sustenance. It is called greed---it is what led the locals living within Sariska to lead the poacher to the tiger. Ditto Ranthambhore and Bandhvgarh. It is a human trait, the poor villager living in abject poverty in the jungles is as vulnerable to the lure of money and to rise above his living standard as his urban counterpart.

Wildlife traders living in cities cannot stroll into forests, shoot a tiger and walk away. To track tigers and other big game, local knowledge is essential and this is where the cash-rich trader uses the local people. People within a tiger reserve is not good news. Both for man and animal. Living cheek by jowl, the conflict between man and carnivore will only intensify. The tiger does hunt livestock, and sometimes even, man. In this battle between man and beast, there will be

no clear winners. For the tiger, people within its habitat is catastrophic. The Java, Bali and Caspian tiger have gone extinct because of excessive exploitation and human interference in their landscape. Wildlife scientists from across the world have concluded, from studies across habitats, that tigers do not breed in co-existence with human beings. They need inviolate spaces. Cats need undisturbed habitat in order to proliferate. If people dwell around habitat, the forest will soon see a tiger drought. This is simple biology of the animal. A classic example of this is Chilla range in Rajaji National Park, where there were several *deras* of the Van Gujjars, a nomadic, pastoral tribe. The habitat bore the scars of a human dwelling; refuse, putrid nullahs, and grasses minced away by livestock. For twenty years, Chilla rarely saw the odd tiger, and then about two years back, the Gujjars of Chilla were relocated. This year, two tigress's have made Chilla their nursery, and a third is pregnant. Chilla is a lesson that all that the tiger need to flourish is an inviolate space and adequate protection.

This is a school of thought that the chairperson of task force does not subscribe to, and this has created a chasm within the members of the task force. The task force must remember that its purpose of its creation was to halt the decline in the number of tigers, protect and effectively manage their habitat, not to push the Tribal Land Rights Bill. The rationale bandied about is that since the forest service and conservationists have failed to protect the tiger, therefore the people must take over. By this same token the claim that, the people must take over law too. One sees enough instances of lawlessness to brand the police a failure, but does that meant we should disband the police force? There is simply too much money in exploiting forests and killing tigers to do away with the laws governing wildlife and forests as the bill proposes.

It is time that everyone understands that the tiger is the apex predator and it is because of him that the forests are protected and because there are forests there is water. Tragically, the entire 'people vs. tiger' has taken a vicious turn. A healthy debate is welcome, but the fight has got dirty. Since the controversy begun I have had 'sources' giving information on a certain people activist living off tribals as well as poaching and wildlife trade charges on two of our most respected wildlife experts. As a journalist, I have investigated these, and found them baseless. It is disgusting that tiger and tribal conservation has stooped down to dirty politicking, with lobbies viciously trying to out-manuever each other.

Nor does exclusively blaming Project Tiger work. The tiger crisis has not occurred overnight, it took some years in the making, while all of us slept. It is the need of the hour to make Project Tiger stronger, to make it more than mere bank whose job is to finance reserves across the country, with only recommendatory powers towards its management. I find it tragic that at a time like this, when all of us; people, officers, government, wildlife activists et al, should be standing together: all they do is indulge in a campaign, not to save the tiger, but to run each other down. All efforts must be directed towards fighting the real enemy - the poacher, the politician, the businessman, all intent on killing the tiger and pillaging its habitat.

Saving the tiger has taken on the tone of a circus. The honourable Union Minister of Science Shri Kapil Sibal wants to invest huge amounts in DNA and the CCMB plans to make tiger dollies. To recreate Tiger clones. Let's us not even question the science, which is yet to be perfected. Does it make sense to invest crores on cloning tigers? When this money is best diverted to better equip those who protect our forests and provide for people displaced by forests? Will someone please tell me where these cloned tigers will live and hunt and breed once DNA has resurrected them? With tribals in the forest?

If we have been unable to protect the wild tiger and habitat, how do we imagine conserving those we 'create'? India has seen a tiger crisis before in late 1960s, when populations dipped to less than 2,000. A passionately committed Prime Minister created Project Tiger, while zealous officers, international support, strict laws and a strong public opinion gave the tiger a second lease of life. Then came the second disaster in the early 1990s, when a demand for tiger skins and body parts in South-east Asia and western countries disseminated our wild tigers. That crisis was not recognized in time, but strict measures did show resurgence or so we thought. India's tigers are again at the crossroads, where it could possibly live and thrive, or more likely, going by our present comatose mode, we could lose it forever. Trips to Ranthambhore don't save tigers, however well meant they are, Mr Prime Minister. Only unrelenting commitment to do so can. It is high time that the recommendations by numerous committees set up over the years for controlling poaching and conserving the tiger were adhered to. The immediate creation of a Wildlife Crime Bureau and a higher conviction rate of wildlife criminals will go a long way. The protection of tiger reserves, by well-equipped forest staff (eventually building up a forest police force) and supported by para-military forces is an urgent requirement. The fresh recruitment in forest staff is a major priority for in some states recruitment has been frozen for over 20 years. And finally the creation a dedicated Ministry or at the very least a separate forests and wildlife department will make all the difference. It is absolutely essential that atleast four percent of India remains inviolate, dedicated to wildlife.

Else, lets stop uttering platitudes and false promises. Let us give up the pretence of our concern for the tiger and let us continue to plunder the tiger and its habitat. This is not time for half-measures. Act now or else bid adieu to the *Panthera tigris*.

Source- An article of Prerna Singh Bindra, which appeared in Pioneer in third wæek of July 2006.

Peace Nobel for Yunus

Bangladesh's Muhammad Yunus dubbed the "Banker to the poor" has won the Nobel Peace Prize for helping millions escape the poverty trap through a system of small scale loans. Loans to poor people without any financial security had appeared to be an impossible idea. From modest beginnings three decades ago, Yunus has, first and foremost through Grameen Bank, developed micro-credit into an ever more important instrument in the struggle against poverty. Micro-credit has proved to be an important liberating force in societies where women in particular have to struggle against repressive social and economic conditions.

Source : Wastelands News, Vol.XXII, No. 1 August-October 2006, page 41

Asian cities choking on air pollution

AIR POLLUTIONS is killing more than half a million people in Asian cities like New Delhi, Kolkata, Kathmandu, Beijing, Dhaka, Hanoi, Ho Chi Minh City, Jakarta, and Shanghai each year and shows no sign of improving as urban centres expand, studies by the Asian Development Bank (ADB) show.

A recent ADB conference in Indonesia was told that air pollution had reached "serious" levels in several Asian cities, with the problem worsening due to increased urbanisation and motor vehicle use.

The Manila-based bank cited China, already the world's fourth-largest economy, where the number of cars and sport-utility vehicles could rise by as much as 15 times over the next 30

years to more than 190 million vehicles. In India, the growth could be as much as 13-fold, it said.

Correspondingly, carbon-dioxide emissions could be expected to rise by 3.4 times for China and 5.8 times for India over the same period, the ADB study said.

To help address these problems, the Indonesia conference, attended by representatives of 20 Asian countries, issued a call for a review of air-quality standards and air-pollution indices all over the region to make them more effective and more comparable to each other.

World Health Organisation (WHO) expert Michal Krzyznowski said the estimate of premature deaths caused by urban air pollution had been revised upwards to over 750,000 globally, including more than 530,000 in Asia.

Experts cited the increase in an air pollutant known as fine particulate matter-or PM10—a result of burning fossil fuels that “enters the lungs and stays there”.

“There is a strong association between fine particulate matter and health issues in Asia as there is in Europe and the US, but in Asia the concentrations of particulates are much higher,” said the report’s author, Dieter Schwela.

In many cities, the concentration of PM10 exceeds 70 micrograms per cubic metre. New WHO guidelines say this should be lower than 20 micrograms per cubic metre.

Source: Hindustan times, Dec,18, 2006

Twins' tryst with films on wildlife Profile

by Harihar Swarup

They are twins, now in their late twenties. They took to wildlife photography after graduation. The twins—Ajay and Vijay Bedi—initially completed a diploma course in Camera, Lighting and Computer Aided Movie but little did they know that one day they would make world headlines. Talent of wildlife film making seems to flow in Bedi brothers' blood. They proudly acknowledge that they inherited the mantle from their father, Naresh Bedi, the first-ever Indian to have won the Green Oscar in 1984 for his film *Ganges Ghariyal* (crocodiles of the holy Ganga). It was the proudest moment for the elder Bedi when the twins bagged what is popularly known as the Green Oscar for their film—*Cherub of the Mist*. It is a 53 minute movie on the endangered Red Panda of Himalayas.

Set in the misty mountains of the Himalayas, the film follows the life and love of two zoo-bred pandas, who were released into the Singhalila National Park forest in Darjeeling (North-West). From courtship to rearing of the cubs, the film gives viewers a glimpse of this mysterious animal. It was only after a two-year-long chase in the freezing cold of the Himalayas that the crew managed to get 100 hours of material.

In the words of Vijay Bedi, “the most challenging sequences to the film were the mating of the Red Pandas, newtling and giving birth”. The courting and mating take place during January and February in subzero temperatures. It is very difficult and hazardous tracking pandas in such conditions. Vijay says, “the camera team has to be lucky to be present at the right place at the right moment as females are receptive only for a single day in a year”.

Wildlife specialists say, the female Red Panda gets pregnant only once a year, and this has put the species on the brink of extinction. There has also been poaching from Nepal side. The number of surviving pandas is only 1,500, according to a census report. The prestigious award to Bedi brothers, say experts, may help survival of young pandas in India in contrast to China where giant pandas have not received much attention.

Two years back, their documentary, *The Policing of the Langur*, was adjudged the best in the New Comers Category at Wild Screen Film Festival. Delhi's growing monkey population interested Ajay and Vijay and they stumbled upon the idea of making a documentary as newspapers reported about the monkey menace.

What made the venture interesting was that a langur was used to scare away other breed of monkeys. In the national capital, the monkeys were seen threatening people, raiding houses, schools, offices, hospitals and even airports. Ironically, the only remedy that was found effective was to engage the service of bigger and powerful langurs to drive away others. The documentary captures the colourful vista of man-monkey relationship in India, dating back to mythological times. The film is a captivating tale of veneration, tolerance and co-existence.

Training for Ajay and Vijay for wildlife filming began quite early in life and in the thick of the jungle. Not only their father, Naresh, but grandfather, Dr Ramesh Bedi too was a pioneer film maker. The twins vividly remember spending most of their holidays in one national park or the other with their father.

Wildlife film makers face lot of problems as first, it is hard to get financiers and secondly, to find buyers. Also the filming of this nature needs sophisticated equipment and lot of time to spare. In case of Bedi brothers, financiers came easily and provided them a platform to participate in environment and wildlife film festivals. Their works include a film on wild asses titled, *Rider of the Storm and First Out of Africa*. Their documentary on *Ongis tribes of the Andaman and Nicobar Islands* has been greatly appreciated.

The Wild Screen Festival which has entered its 26th year, proposes to help film makers from developing and underdeveloped countries. It is making a debut in India in January 2007. With nine award-winning films, it will be held in Chennai for three days from January 23 to 25. It will then move on to New Delhi, Kolkata and Pune.

Source: *The Tribune*, Nov,5, 2006

Tigers as pets

Yes, there are confirmed reports that in Texas alone there are more than 4,000 pet tigers. They live within secure and vast enclosures on the very extensive ranches in Texas. Most of these private land-holdings (ranches) are bigger than the Bandhavgarh Tiger Reserve in Madhya Pradesh which at one time had 20-30 tigers in the wild. So, these pets are not in the same class as a Siamese cat or a Dalmatian sharing the space inside your bedroom !

These tigers in the US are deemed "pets" simply because they are not "wild". No matter where these pets in Texas came from, but the home in Texas they have is away from "home". And over a period of time they will lose the genetic purity of the species and will undergo the kind of genetic change as from a Negro to an American Negro (with due apology to all Americans). Scientists, I believe, call this process the creation of "genetic bottlenecks" leading to hybridisation. The Cheetah in India was driven to extinction in November 1947. But the Cheetah still survives in Africa in the wild. Is that any source of comfort or pride for us Indians? Similarly, if the Royal Bengal Tigers were to perish from India but survived as "pets" in Texas, would that be a matter of solace or shame for Indians?

The bald-headed eagle is America's national bird and its emblem. American laws will not permit the domestication (pets) of its national bird neither on American soil nor outside the US. Almost all their nesting sites have been catalogued and local communities voluntarily mount day and night vigils to prevent any mischief from nesting all the way to the fledging stage of the progeny of their national bird. We in India (Punjab) have the now infamous case of an SDM shooting several of India's national bird way back on February 29, 2004, but he has yet to be

charge-sheeted.

Incidentally, the Royal Bengal Tiger is an officially declared "national animal" of India. If you have not seen one in the wild, turn to the reverse of a ten rupee Indian currency note. Is not the tiger beautiful ! So, let us not confuse the concern for its threatened extinction from India with abundance of pet-tigers in the US. The tiger in the wild is our heritage handed in trust from one generation to another.

Should we in India not prevent the extinction of the tiger as a species from the wild.

LT-GEN BALJIT SINGH (RETD), Chandigarh

Source : The Tribune May 31, 2006

NEW BIRD DISCOVERED IN INDIA

The Indian bird species has added another feather to its plumage. With the discovery of 'Bugun Liocichla' by Pune-based radio astronomer and bird watcher Ramana Athreya, it is for the first time that a new species has been detected in mainland India since 1948. Now the total count of Indian bird species stands at 1226. Lt Gen Baljit Singh (retd) records the new entry into the avian world

In the West Kameng district of Arunachal Pradesh, mid-way on the Tezpur-Bomdila-Tawang road in a forest tract of 218 sq km lies the little-known Eaglenest Wildlife Sanctuary. From near anonymity, it has overnight become the focus of worldwide excitement for ornithologists. On May 25 this year Ramana Athreya, a radio astronomer and an ardent bird watcher from Pune, discovered an Indian bird species hitherto unknown to science. The count of species, which stood at 1,225 for India since 1948, has now moved up by one digit.

In general, people are attracted to a bird either because of its brilliant plumage (the peacock) or its appealing song (the Blue Whistling Thrush). As far as the overall impact of colour is concerned, Ramana's discovery is so sublime that you can never have enough of it. Shades of red, black, flaming orange, yellow, brown, olive, grey, white, flesh pink and silver are deftly interwoven into a matrix, the ultimate in colour harmony.

The news of the discovery became public only in mid-september because many exacting demands had to be met to provide evidence.

Ramana has provided all save one. He was very wise not to kill the bird for a "full museum specimen". He is to be congratulated for his courage and compassion to reject this one scientific pre-requisite because so far not more than 14 birds of the discovered species have been spotted. In any case, Ramana has irrefutable photographic evidence, sound recordings of the bird's song on tape, two feathers (one from the tail and another from the wing) and more than a dozen enthusiasts from the US and Europe as witnesses, who per chance happened to be with him on that fateful day. All evidence (of course, minus the witnesses) has been deposited with the Bombay Natural History Society, Mumbai.

What about the name of the bird? Well, it has been identified as a species from the Asian Babbler family. For the purpose of international convenience in usage, all birds are given a scientific name (in Latin) and an

The news of the discovery became public only in mid-September because many exacting demands had to be met to provide evidence. Ramana had provided all save one. He was very wise not to kill the bird for a "full museum specimen". He is to be congratulated for his courage and compassion to reject this one scientific prerequisite because so far not more than 14 birds of the discovered species have been spotted.

English (common) name. And, of course, they retain their vernacular (regional) name. Ramana very promptly named it Bugun Liocichla, which got Latinised as *Liocichla Bugunorum*.

Buguns are the local tribe which cohabit the area with this bird. These tribesmen accompanied Ramana during all his ventures in that area. The name is both a token of Ramana's appreciation to them and the hope of a symbiotic relationship between the Buguns and the Liocichla.

For the present the bird has no common or vernacular name but in the fitness of things it would be just appropriate to call it Athreya's Babbler. There are very good reasons to do so. Firstly, there is the universal precedence in ornithology to assign eponyms to birds.

For instance we have Jerdon's Double-Banded Courser, after Maj T.C. Jerdon of the Indian Army who had discovered it. To name just one more, we also have Tickell's Blue Flycatcher; Tickell too was from the Indian Army, a Lieutenant Colonel.

More than all other considerations, this is the only bird of India's 1,226 species that has been discovered by and whose scientific text has also been written by an Indian, Ramana Athreya. Do we need to labour on this aspect any more?

Now what takes Ramana, a graduate from IIT Kanpur (1989), a radio astronomer of international standing, currently on the rolls of the National Centre for Astrophysics on the Pune University Campus, to the Eaglenest in W Kameng? To begin with, it was to spend a short holiday with his wife, who was pursuing a field project in Kameng for her doctoral thesis. Birdwatching has always been a passion but when in January 1995 he first saw a pair of birds all he knew was that "they did not fit any description in S. Ali & S.D. Ripley's *Complete Handbook of the Birds of India and Pakistan* (1987)". The next sighting came after 10 long agonising years in January 2005; a flock of six at 3 p.m. and of another four at 3.45 pm. In collaboration with two friends from the Wildlife Institute of India, Dehra Dun, and with permission from the government, they attempted to mist-net a specimen between January 23 and 28, 2005, but did not succeed.

He returned to the site in March and April this year and over four different days saw 14 of these birds. On May 21, he attempted and succeeded in mist-netting one bird. Unfortunately, the bird escaped after just three photographs. Ultimately on May 25, Ramana's luck held when he netted one more. Now he created a complete photographic evidence, took bodily measurements with vernier calipers, made detailed notes and in less than two hours released the bird to join its kind. And the discovery became a fact of life from that moment!

In 1994, the North-eastern Himalayas were listed among the dozen biodiversity rich hot-spots of global significance. Once Ramana saw the Eaglenest sanctuary, he conceived a project to document its biodiversity, coopt the tribes (Bugun and Sherdukpen) as partners in conservation of biodiversity and in return provide them with alternative socio-economic sustenance such as eco-tourism. Funded by the Ruthford Foundation, the project was launched in November 2003.

Birdwatchers from the US and Europe proved most eager for recreation of this kind. Ramana has already successfully conducted one such group in collaboration with the locals in 2004 and two in 2006.

All proceeds from this eco-tourism venture have gone to the Village Tribal Council, which has pledged to keep the project going.

Ramana in the meantime has obtained funds from the Ford Foundation for creating tented accommodation for visiting groups. Indian professional and amateur ornithologists have been offered a "vacation-for-conservation" plan where participants are charged tariff at zero-profit, provided experienced guide gratis and all this is in return for simply documenting the flora and fauns of Eaglenest.

When Ramana Athreya had first seen the Bugun Liocichla in 1995 and then could not spot it till 2005, he "began to doubt what I had seen". And now whole of India sees and rejoices in having a spanking, cuddly new bird, just 2mm bigger than the familiar Red vented Bulbul.

Source : *the Tribune*, Oct. 21, 2006

Note: See photograph of the Bird on inner side of cover page.

Cheetal

Young Readers Section

My First Contact With A tiger

Written by Michael Harrison, Allen Memorial School, Mussoorie in 1944.

Being my third last day at home after spending three months holidays, I decided to go out for a shoot and spend the night out.

Getting some tinned provisions together, I then saw to the bikes. We took some solution and other odds and ends in case of punctures and any sort of bike trouble that could be experienced on a cross country route. Then having had lunch, we got our guns and ammunition together, slung the weapons on our shoulders, tied the remainder of our light equipment to the bikes and set out on our trail at about 2 p.m.

The journey before us was about ten miles. Six of the ten were easy going, being the Ganges Canal bank, but the last four miles I am sorry to say were hard going. Diverging from the tarred road, we came on to soft sand. As you know one cannot ride on sand, so getting off we commenced trudging the remaining four miles, although riding now and then when we came to parts where cycling was possible. After about three hours hard going, we arrived at our destination which was at the foot of the Siwaliks, the name of the small village being Asafanagar.

This village was my favourite hunt, and the headman was an extremely hospitable man. On seeing us, he met us with "salaams" and cordially invited us to his house which was to be our residence for the night. We sat down on a spot for rest and then saw to our beds etc., after which we had tea that had been prepared for us. Evening was setting in, so I decided to roam about with my gun in the near vicinity of the village, expecting to bag a peafowl or jungle fowl. I was lucky in getting two jungle fowls, so hurried back and gave them to be cooked for dinner. At about 9 p.m. we were called for the meal, and we sat down to a good dinner. The fowls smelt very appetising and most tasty, so we had a hearty meal. The night was spent in comfortable sleep.

As dawn set in we were ready to leave for the day's shoot. Collecting a few beaters, we were soon in the heart of the forest. But to our bad luck, we never saw a feather in the first part of the day. During the afternoon things began to improve, and we came across herds of cheetal or spotted deer, some sambhar, a pig, and numerous peafowl and jungle fowl.

Coming out of a patch of extremely dense jungle, I came upon a dead camel. Examining it closely we noticed it had fallen prey to an enormous tiger, as the pug marks around the kill were huge and fresh. The tiger had apparently heard us and moved away from the spot, as blood was still oozing out of the hindquarters from where it had started eating.

Now we had to decide whether to sit up for it or not, as I was to leave for school next morning at 10 a.m. It seemed to be a wonderful opportunity, so we decided to sit up.

A machan was constructed and at about 6 p.m. we got into it. We expected the beast to come within the hours of 7 p.m. to 8 p.m., but it was not so. We sat motionless till about 9 p.m., after which I decided to have a sleep.

I was awakened by my dad at about half past one in the morning, with the good news that the tiger was prowling about. The moon was now shining bright above us.

Listening carefully I heard the beast coming towards us and not before long I saw him in a patch of moonlight which had penetrated through the tall trees. There he was, a monster, standing

majestically and looking towards his kill ! But he was very suspicious and would not approach too close and kept on walking around the kill. He stopped again in a patch of moonlight and was looking up towards us, then suddenly made a quiet move and was beside his kill.

My dad's gun was to his shoulder and I took aim, but when lifting my gun he apparently saw me, as I was in rather a conspicuous place on the machan. Had he waited another second there might have been a different tale to tell. But it was his fate to live. He gave an angry roar and bounded heavily away.

We got off the machan and made an immediate start for home, at 2-30 a.m. The journey through the forest at that hour was enough to put our hair on end, as now and then some sort of an animal would make a noise, or an owl would give a weird, sharp shriek. Taking our bikes from the village, we walked on till we arrived at the canal banks, from where we took an easy ride reaching home at 6-30 a.m. It was a bitterly cold mornig. I dressed on arrival and was ready to leave for school by the 10 o'clock bus.

This was my first, but unlucky, chance to bag a tiger.

This article was published in the Young People's Corner in Vol 2, No.1 pages 54&55 of "The Cheetal"

What Makes an Insect an Insect?

Insects belong to the large group, (or Phylum) of animals called Arthropods. Arthropods include shrimps, crabs, spiders, millipedes, centipedes, ticks, mites and similar animals.

Arthropods have jointed legs (in fact, the word arthropod means "jointed leg") and bodies that are divided into segments. All arthropods have segmented bodies. The segments are easy to see on some of them, e.g. millipedes or centipedes, but difficult to see on some other insects like silverfish. Insects are one group (class) of arthropods and are characterized by the fact that they all have six legs.

Here are some of the characteristics that are common to all insects.

Small size: Most insects are very small as compared to birds, mammals, reptiles and fish. Because of their small size they can live in places many other animals cannot. Being small has great advantages. Insects can easily hide or escape from enemies and find food in inaccessible places like cracks in a tree bark or under stones. To keep up their small bodies, insects can manage with very little food, water or oxygen and so do not suffer when there are shortages in the external environment.

Small size is also convenient for mobility. Insects can be easily transported by the wind, or hitch a ride on other animals and find new places to live. The smallest insects are the Hairy-winged beetles that are as tiny as 0.025 cm (about 1/100th of an inch). They could easily crawl through the eye of a needle. But there are large insects too. The Atlas moth (female) whose wingspan measures 33.02 cm (13 inches) almost the wingspan of a small bird is the largest of the insects.

Exoskeleton: Insects like all arthropods-do not have skeletons inside their bodies for support. They are thus unlike humans or other vertebrates (birds, mammals, reptiles, amphibians and fish) that have skeletons.

Since there is no skeleton inside their body, insects have no backbone. That is why they are also called **invertebrates**, meaning animals without backbones. Of course there are several other animals besides arthropods who do not have a backbone; for example, earth-worms and snails.

Insects have a hard outer covering called an exoskeleton. *Exo* in Latin means outer. (All arthropods, including spiders, mites, millipedes, and crabs have an exoskeleton). The exoskeleton helps protect the soft internal organs and also prevents the bodies from drying out. The exoskeleton is made up of layers. The outside layer is waxy and acts like a waterproof raincoat. Underneath the waxy layer is a very tough, armour-like layer. The exoskeleton or the outer-skeleton is worn on the insect bodies and the internal organs are connected to the inner sides of the exoskeleton for support, so that they remain firmly in place.

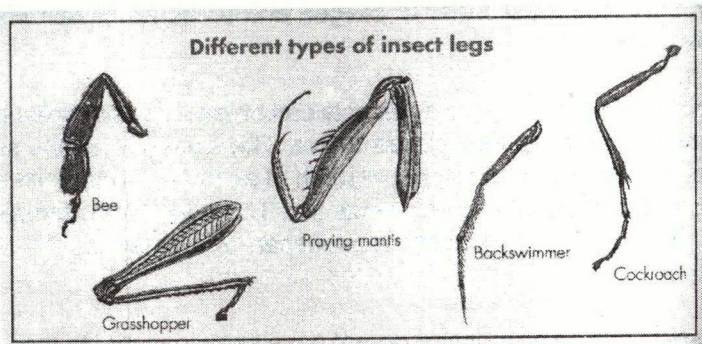
Segments: All insects are made up of segments or parts. Each segment is attached to another by a muscle-like covering. Some of these segments overlap. This gives flexibility to the bodies of insects. Insects have three main body parts-the **head**, the **thorax** and the **abdomen**. With some insects like the silverfish it is almost impossible to see exactly where one main part starts and the next one stops. But there is an easy way to tell which part is which.

When you look at an insect, (preferably with a magnifying glass), the segment which has eyes, antennae and mouth, is the head. The legs and wings are attached to the thorax. And the abdomen is what is left. (The head, thorax and abdomen are further divided into smaller segments).

Legs: All insects have six legs. This is the easiest way to recognizing an insect. By looking at an insect's legs, you can sometimes tell where an insect lives or what it eats. For example, the front pair of legs of the mole cricket have sharp claws and strong muscles, which are useful for digging. This allows it to tunnel quickly through soil. Many insects that live in water, such as diving beetle or water boatman, have flattened, oarlike legs to help them paddle. Other insects, such as praying mantis and dragonflies, have grasping legs. These insects use their grasping legs to capture their prey and hold on firmly. Grasshoppers and fleas have legs designed to jump high.

Wings:

Insects are the creatures that can fly. Each insect has wings of the in- up of two pressed membranes supported by a network of "veins" running through them. The veins in the wings differ in number and pattern in different



only invertebrates. Only adult insects have wings. Each wing is made of two closely joined membranes, supported by a network of veins between them. While they differ in shape and arrangement, the

pattern of veins is the same in all individual insects of that particular type, and therefore are very useful for classification of insects. Often the front pair of wings are leathery or shell-like and not folded as in the case of grasshoppers and beetles; they serve as covers for the next pair of wings used for flying. These flight wings are thin membranes and often folded like a fan.

Most insects have two pairs of wings. However, flies and mosquitoes are exceptions with only one pair of wings. The hind wings are reduced to very small pin-like knobs known as balancers which help to maintain stability during flight.

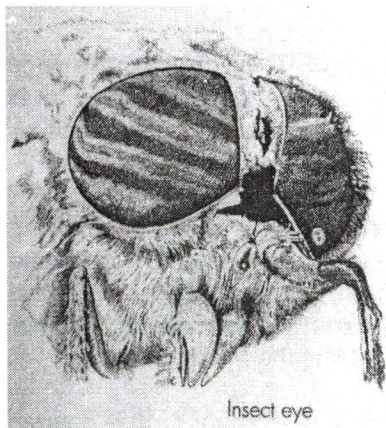
One way by which insects are identified and grouped into smaller subdivisions (orders) is on the basis of their wing characteristics.

Being able to fly is a great advantage for insects. It means they can cover large distances to find new places to live, discover new food sources, escape quickly from predators and find mates. The best examples of insects that fly long distances for some of these reasons are Locusts, Painted Lady butterflies, and Emigrant butterflies. Some insects such as springtails, silverfish, and bristletails do not have wings. This is because the places where these wingless insects live -under stones, rotting logs, leaf litter and even under the soil-are places where there is hardly any need to fly.

Eyes: Most insects have two types of eyes: simple and compound.

The compound eyes are usually the large prominent pair, often covering a large part of the head. However in some insects, especially those that live on the ground and eat plants, the compound eyes may be fairly small. The compound eyes are made up of thousands of tiny

lenses that fit closely together. The lenses force light rays to bend and focus on a special cell behind the eye. Each lens forms one little picture and all the lenses together form a mosaic picture of the world around the insect.



This mosaic picture is not very sharp and lacks detail. Compared to human beings, most insects have poor eyesight. For example, a person can see 100 times more clearly than a honeybee. However, the more lenses in the compound eye, the better the insect can see. Dragonflies have the best eyesight, some having over 25,000 separate lenses in each eye. Houseflies have over 4,000 lenses. Compound eyes can recognize colour and pattern and are very sensitive to movement. Usually only adult insects, and

some nymphs (e.g. those of the cockroach, mantids, grasshoppers) and naiads of dragonflies have compound eyes. Caterpillars of butterflies and moths have only simple eyes that can detect light and dark conditions, but cannot focus to receive images. Maggots of some parasitic flies have no eyes at all, because they live inside a host's body where it is dark and there is no need to see. The maggot has only to feel and eat the body tissues.

Many insects also have triangle of three simple eyes like tiny glass beads between their compound eyes. Others may have two, one, or no simple eyes. Most **entomologists** (scientists who study insects) are not sure exactly how these simple eyes are used, but they know the eyes are sensitive to light and dark.

Antennae: Most insects have a pair of sensitive 'feelers' (antennae) on their heads. These are used to feel (touch), smell, and in some insects, hear. Insect antennae differ in size, shape, and how they are used. They are made of a chain of segments, each well supplied with nerve-endings. Antennae are important clues for identifying types of insects. For example, butterflies antennae are clubbed at the tip, while ants have elbowed antennae. The shape of antennae vary according to the purpose they serve. For example, among some moths the male has more feathery antennae than the female. This helps to increase the efficiency to pick-up the scent of the female. Similarly male mosquito has bushy antennae.



Butterfly antennae



Moth antennae

Hairs: Insects are covered with thousands of sensory hairs on their exoskeletons. The hairs are connected to the central nervous system and are very sensitive to movement, pressure, smell, and sound. Thousands of hairs cover the legs, antennae, and all other body parts of insects. Hairs on the wings of some insects are very sensitive to air currents. They can alert the insect when any solid object is approaching. This is what causes a fly to fly away just as you roll up the newspaper to swat it. Its hairs sense the air displaced by the paper roll, and convey the warning to the fly.

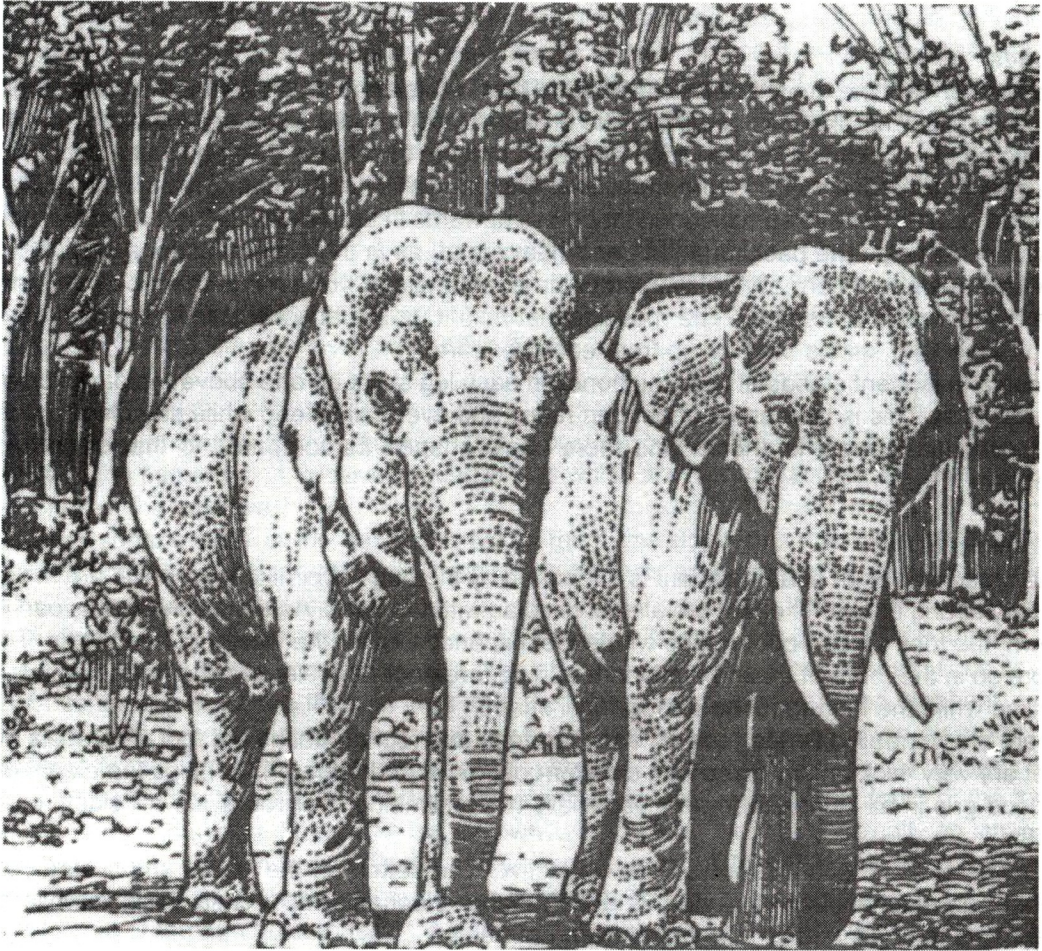
Insect Blood: Insects have a very simple circulatory system. They do not have a complex network of veins and arteries, as we do. Instead they have a simple tube-like heart that extends from the rear end of the abdomen into the head. If you take a close look at the back of a pale coloured hairless caterpillar, you can see a dark tube pulsating at intervals just below the skin. Blood is pumped through open body cavities, breathing organs and tissues to supply nourishment to the cells and carry off waste materials. Insect blood which is called haemolymph, is a pale yellowish green and can be almost colourless. It does not carry oxygen. (Vertebrate blood contain hemoglobin, an iron compound that carries oxygen to the cells. Hemoglobin is what makes vertebrate blood red.) Most of us have killed, at sometime, a cockroach in the house and noticed the yellowish "goo" oozing of it. Now we know why the mush is not red!

Pheromones: Many insects can produce chemicals, called pheromones, that communicate messages to other insects. One function of insect pheromones is to attract the opposite sex. The strength of these chemical attractants can be amazing. Female Tusser silk moths, for example, can produce pheromones that male Tusser silk moths can detect up to three kilometres away!

Besides being powerful sex attractants, pheromones serve other purposes. Ants that find a good food source may produce a "pheromone trail" when they return to their ant hill with some of the food. Then other ants can follow the trail back to the food source without getting lost.

What Makes an Elephant an Elephant ?

An old story relates how six blind men once encountered an elephant. Each one touched a different part of the great beast—one touched the trunk, one the ears, one the legs, one the side, one the tail and one its tusks. Each one carried away a different impression of what they had encountered. The one who touched the leg thought the elephant was like a huge tree. The one



who was near the side thought it was a wall. The person holding the trunk thought it was a snake. The one who was near the tail thought it was a rope, and the one who felt the ears thought it was a fan. The one who held the tusk thought it was a spear. Thus the elephant acquired many different identities, but all these together did not add up to what an elephant is really like.

What then, really makes an elephant ?

Size

The African elephant, *Loxodonta africana*, is the largest of the animal species living on land today. An adult male African elephant may weigh up to 6000 kg, and attain a height of up to 4 m

at its shoulder. The female African elephant is smaller, weighing up to 3000 kg and measuring 2 to 4 m in height. The Asian elephant, whose scientific name is *Elephas maximus*, meaning "the biggest elephant", is in fact second in size to its African cousin.

An Asian male elephant, the bull, may weigh up to 5400 kg and attain a height of 3.2 m at the shoulder, while an adult female elephant may weigh approximately 4000 kg and stand 2.5 m at the shoulder. (For more differences between Asian and African elephants. See the table at the end

Bones

Hidden beneath the huge mass of meat and skin is the elephant's skeleton which supports this huge weight. The skeleton is almost like a bridge, with the two pairs of legs at the two ends acting as the columns that are joined by the arch of the backbone. The backbone supports the weight of the 20 pairs of ribs, the muscles, the stomach and the other organs. Both Asian and African elephants have a backbone that curves upwards in the middle, to form a convex shape. This design helps the backbone to bear a heavy load, as in the case of a stone arch.

An Asian elephant normally holds its neck up at an angle of 45° , so that the top of the head is the highest point of its body. The muscles that hold it up are attached to the back of the skull and to the long spines sticking up from each vertebrae.

When an elephant stands at rest, the bones in each leg stack up one above the other to form a sturdy pillar. This is how an elephant can relax, and even fall asleep while standing. The body of an Asian elephant is shorter and more barrel-shaped as compared to that of an African elephant.

Legs and Feet

The massive weight of an elephant is supported by the huge pillar-like legs which are made up of very strong bones. The feet are almost circular, with flat soles. As the elephant puts each foot down, the toes spread out and the whole foot expands to take the weight at every step. This is more so in the forefeet than in the hind feet. The forefoot of the elephant has a circular shaped outline while the hind foot has a more oval shape.

There are normally five toe nails on each forefoot, and four on each hind foot. The soles of the feet are very thick and covered with a pattern of cracks and ridges. This helps the elephant get a good grip in all kinds of terrains, especially when climbing over rocks, up hill sides, or even cliffs.

The sole of an elephant's foot is quite distinctive. The pattern of the ridges and fissures of the sole of an elephant help to judge its age. Younger elephants have crisp designs while older elephants have smoother ridges and worn out heels.

Did you know that twice the circumference of the forefoot gives an approximate estimate of the height of the elephant at the shoulder?

Tip Toes

One would imagine that an elephant, a creature of such great bulk and with such huge feet, would blunder along noisily and clumsily. Quite the contrary! Elephants move so silently that one may not even hear a twig crack beneath the feet. How do they manage this?

If one could look with x-ray eyes at the foot, one would find that the elephant is in fact walking on its toes. The heel is made up of cushion of fatty fibrous tissue which absorbs the impact of the falling foot. Thus elephants can move silently, because they are in fact walking on their toes, and not on the full soles of their feet.

Trunk

Perhaps the one feature that really makes an elephant an elephant is the trunk. The trunk or proboscis (from the Greek word literally meaning 'before the mouth') is a characteristic feature of elephants and it is after this character that the name of the order to which elephants belong, the Proboscidea, was given.

The most remarkable attribute of the trunk of the elephant is its combination of strength and fingertip sensitivity. The trunk serves as a versatile fifth limb and has a high degree of flexibility. The solid heavy body of an elephant could hardly survive unless it were equipped with an efficient organ like the trunk that helps it in satisfying its daily needs of food and water.

The trunk is a combined elongation of the nose and the upper lip. Its dexterity and its ability to perform various functions has probably contributed to the human fascination for elephants. Unlike our limbs that move by muscles pulling against jointed bones, the trunk works by muscles pulling against other muscles. The trunk has no bones down the middle. However, it can do an incredible variety of things.

The trunk accommodates two long nostril tubes, surrounded by over a hundred thousand long muscles, some running all the way down from the skull, and interconnecting with shorter muscles that radiate like bicycle spokes around each nostril.

Ears

The basic role of the ear is to detect sounds and convey them to the brain. The external portion of the ear, the flap or pinna, receives sound waves which are then passed as vibrations through the bones of the inner ear.

The large surface area of the ear flaps makes them the elephant's most important external organ for controlling body heat. Quite literally, the ear acts as a radiator and helps in keeping the body cool. On the underside of each ear, just below the surface, there is an extensive fan-like arrangement of blood vessels. As the elephant flaps its ears, hot blood in the arteries gets cooled and returns to the body. To increase the efficiency of cooling, the elephant flaps its ears almost constantly. Ears are thus an important thermoregulating device for an elephant.

The ears of an African elephant are four times the size of those of an Asian elephant. The difference in the size of the ears of the two elephants is directly linked with the differences in their habitats and behaviour. The Asian elephant, if left to itself, lives in the depth of the forest, and will remain in shade throughout the day, while the African elephant, typically an inhabitant of the Savannah, which has very limited shade, spends most of its time under the hot sun. The size of the ears is thus directly related to the exposure to sun.

Unlike those of the African elephant, the ears of the Asian elephant do not exceed the height of the neck.

Teeth

Elephant's teeth are different from those of all other animals with regard to the size, shape and the way they grow. Most mammals, including humans, have two sets of teeth in their lifetime. The elephant's cheek teeth or molars, which do all the grinding of the elephant's food, are replaced six times in its lifetime. Elephants have two cheek teeth in each jaw, one on each side. The teeth of elephants do not grow down from the top in the top jaw and up from the bottom jaw as ours do, but move along the jaw, from the back towards the front, as the older ones get worn off. Thus each new set of teeth moves into place as the elephant grows, and old teeth keep wearing out. Only one set of molars are in use at any given time. An elephant chews its food with a forward and backward circular motion of the lower jaw.

Newborn calves possess the first and second molars at their birth. The first molars of an elephant disappear around the age of 3 to 4 years. The second molars stay with it for 6 to 7 years. The third molars become functional between the ages of 3 to 13 years, the fourth between 6 and 26 years and the fifth between 16 to 43 years. The last set of molars of an elephant arrive around the age of 33 years. The elephant loses these around the age of 50 and it is after this that the elephant becomes less efficient at feeding. A diet based entirely on grass rich in silica can wear the teeth faster, and therefore elephants feeding largely on grass may die earlier than elephants which feed on more succulent forage.

Scientists estimate the age of an elephant by studying the size of the teeth, and the degree of wear and tear of the teeth.

Tusks

Perhaps these are the only teeth of an elephant that people know about. Tusks are in fact modified incisor teeth that grow out from the upper jaw and have no counterpart in the lower jaw. Tusks continue to grow throughout the life of an elephant. They are composed of dentine. One-third of the tusk lies hidden within the upper jaw and is deeply embedded in the skull. The root end of the tusk is hollow and filled with vascular tissue which extends forward into the tusk to a point just beyond the lip line.

Not all elephants have tusks. While both male and female African elephants have tusks, among Asian elephants, only males have tusks. Even among Asian male elephants, not all have tusks. Tuskless bulls are called *makhnas*. Tusks grow continuously at the rate of about 17 cm per year. At times, tusks of an elephant may get chipped or broken as a result of wear and tear. Tusklessness is the norm for female Asian elephants, but they do have two incisor teeth. These are known as tushes, and are like small tusks that grow so slowly that they seldom protrude enough to be noticed. There are however, instances recorded where female elephants in zoos have tushes as long as 0.3 m.

An elephant's tusks perform a variety of functions. They are used as tools for digging, as weapons against predators and other bulls, and as display to attract mates. Elephants also use their tusks to strip off tree barks or dig up roots. The size of a male elephant's tusks may indicate its degree of dominance in the herd.

Just as human beings are right or left handed, so are elephants right or left-handed, so are elephants right or left-tusked; the tusk that is used more than the other is called the 'master tusk'. Master tusks can easily be distinguished since they are shorter and more rounded at the tip because of wear and tear.

Skin

The term 'Pachyderm' refers to the thick skin of elephants. 'Pachy' means thick and 'derma' means skin. The thickness of the elephant's skin varies over the entire body, being approximately 1 to 2 mm on the inside of the ears and about 2.5 cm around the back and in some places on the head.

The skin is a sensitive organ. Sparse hair and bristles may be seen distributed unevenly over the body. The body of a baby elephant is covered with brownish hair all over, especially on the back and the head. The amount of hair on an elephant's body reduces with age.

In young elephants the skin is greyish-black in colour. As elephants age, sometimes pink-white marks appear on the skin. This depigmentation of skin begins from the base and tip of the trunk, then spreads along the edges of ears, the temples, the neck and finally to entire sections of the skin. This is often seen on Asian elephants, but rarely, if ever, on African el-

ephants.

Tail

During the early stages of an elephant's life, the tuft of hair at the end of its tail is small and soft. As the elephant grows older, the tuft becomes hard, long and attains a wiry appearance.

Growth

Elephants are unusual among mammals as they continue to grow throughout their life, although the rate of growth slows after they reach sexual maturity. So it is possible to estimate the age of elephants by estimating their shoulder heights.

Life Span

The life span of elephants in the wild is about 60 to 70 years, though an elephant might live longer in captivity.

The age of an elephant can be estimated by the condition of the nails and the ears. The ears of an elephant stand erect till about the age of 6 to 7 years and begin to droop after that. By the time the elephant nears 30, its ear flaps start hanging loosely. As the elephant grows older, its ears might also tear. The lower part of the ear slowly loses resilience as the elephant ages, and becomes loose and flappy. Older elephants will also have more protruberances of skull bones.

Internal Organs

Brain

The saying that an elephant never forgets is probably true. This statement is supported by the fact that in the wild, elephants appear to remember for years their relationships with other elephants. One fact that may go to substantiate the above statement is that the temporal lobes, which are known to function as memory centres, are very large in elephants.

The brain of an adult elephant weighs approximately 4.5 to 5.5 kg. A human's brain is 2 per cent of his/her total body weight, whereas the elephant's brain is only 0.1 per cent of its body weight. In human beings, the weight of the brain of a human child is approximately 26 per cent of the adult human brain. The weight of the brain of an elephant calf is 35 per cent of the adult elephant brain.

Heart

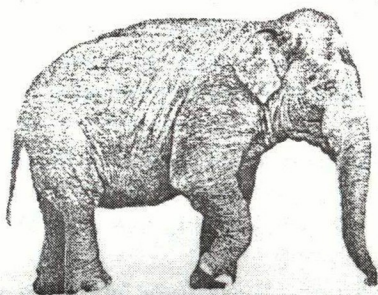
The heart of the elephant is large and weighs about 12 to 21 kg, which is 0.5 per cent of the total body weight. This is a proportion normal for large mammals. A human heart weighs 300 gm which is about 0.4 per cent of the body weight, for a person weighing 60 kg.

The elephant has double veins leading to the heart. This is unusual compared to most mammals. The walls of the veins are much thicker as compared to those of smaller mammals. It is believed that this is necessary to prevent the large vessels from collapsing due to high blood pressure. The arteries are huge, with the arteries leading to the head having a diameter of nearly 2 cm. They are strengthened at the junctions with other arteries by fibrous ridges. These can become calcified with age and may even block the artery, giving rise to strokes and heart attacks.

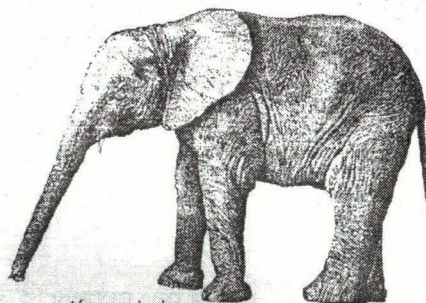
An elephant breathes 12 times per minute, and the heart beats forty times per minute. The average body temperature of an elephant is 39.9°C.

Asian and African Elephants : Differences

Characteristics	Asian Elephant		African Elephant	
Genus	<i>Elephas</i>		<i>Loxodonta</i>	
Species	<i>Maximus</i>		<i>africana</i>	
Ears	Small, do not cover shoulders		Large, cover shoulders	
Average Height	Male	3.2 m	Male	4 m
	Female	2.5 m	Female	2 to 3 m
Average Weight	Male	5400 kg	Male	6000 kg
	Female	4000 kg	Female	3000 kg
Trunk	Less rings, more rigid, one 'finger' at the trunk tip		More rings, less rigid, two 'fingers' at the trunk tip	
Tusks	Only males have tusks. There are also tuskless males		Both males and females have tusks	
Forehead	Two humps		Curved smoothly	
Highest point	Top of the head		Top of the shoulder	
Shape of the back	Convex		Concave	
Number of ribs	Up to 20 pairs		Up to 21 pairs	
Number of nails on forefeet	Five		Four	
Skin	Smooth		Loose	



Asian elephant



African elephant

Avifauna in Some Water Systems of Purulia District, West Bengal, India

R.Chakraborty & S. Kar

(Printed in Cheetal vol. 43, No. 3&4, pages 35 to 40)

Table : I. List of birds observed in aquatic systems of Purulia district, West Bengal.

S = Status R = Resident LM = Local Migrant	M = Migratory SE = Season MO = Monsoon	PM = Postmonsoon TU = Turga TO = Totco	LO = Loharia PA = Panchet KA = Kangsabati	MU = Murguma RU = Rupai SB = Saheb bundh	RB = Ranu bundh RS = River system Po/Si = Population/Sight Po/Km ² = Population / Square kilometre
---	--	--	---	--	---

Sl. No.	Sp. No.	Name of Family & Species	S	SE		TU		TO		LO		PA		KA		MU		RU		SB		RB		RS		Remark
				Mo	PM		Po/Si		Po/Si		Po/Si		Po/Si		Po/Si		Po/Si		Po/Si		Po/Si		Po/Si		Po/Km ²	
	1.	Family : Podicipedidae																								
1.	1.1.	<i>Podiceps ruficollis</i> (Pallas) Little Grebe	R/ LM	+	+	+	2	+	2							+	1		+	5	+	7				More common in other inland waters.
	2.	Family : Phalacrocoracidae																								
2.	2.1.	<i>Phalacrocorax niger</i> (Vieillot) Little Cormorant	R/ LM	+	+	+	8	+	5	+	1	+	7	+	6	+	2	+	3	+	10	+	8			Common also in other inland waters.
3.	2.2.	<i>P. fuscicollis</i> Stephens Indian Shag	R/ LM		+			+	2																	Seen only once.
4.	2.3.	<i>Anhinga rufa</i> (Daudin) Darter	R/ LM	+	+			+	1			+	2	+	2				+	3	+	2				Not seen in any other inland water
	3.	Family : Ardeidae																								
5.	3.1.	<i>Ardea cinerea</i> Linnaeus Grey Heron	R	+				+	2																	Seen only once
6.	3.2.	<i>A. purpurea</i> Linnaeus Purple Heron	R/ LM		+			+	1			+	2	+	1											Not seen in any other aquatic system.
7.	3.3.	<i>A. alba</i> Linnaeus Large Egret	R/ LM		+							+	5													Seen only once
8.	3.4.	<i>Ardeola striatus</i> (Linnaeus) Little Green Heron	R		+							+	2													Seen in both the years.
9.	3.5.	<i>A. grayii</i> (Sykes) Pond Heron	R	+	+	+	5	+	7	+	3	+	5	+	7	+	3	+	4	+	5	+	6	+	2	Very common in other inland water body and paddy fields
10	3.6.	<i>Bubulcus ibis</i> (Linnaeus) Cattle Egret	R	+	+	+	8	+	10	+	7	+	12	+	10	+	4	+	10	+	15	+	17	+	22	common in meadows, paddy fields, fallow lands and near any water system.
11.	3.7.	<i>Egretta garzetta</i> (Linnaeus) Little Egret	R	+	+	+	8	+	12	+	4	+	18	+	22	+	4	+	12	+	29	+	16	+	14	Same as 3.6.

Table I Contd.

Sl. No.	Sp. No.	Name of Family & Species	S	SE	TU		TO		IO		PA		KA		MU		RU		SB		RB		RS		Remark
					Mo	PM	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	
12.	3.8.	<i>Nycticorax nycticorax</i> (Linnaeus)	R/LM			+		+	1																Seen also in Matha during dusk.
13.	3.9.	<i>Ixobrychus cinnamomeus</i> (Gmelin)	R/LM	+				+	2												+	2			Not very common.
14.	3.10.	<i>Z. sinensis</i> (Gmelin)	R/LM	+				+	1																Same as 3.9.
15.	3.11	<i>Botaurus stellaris</i> (Linnaeus)	M			+		+	1																Same as 3.9.
16.	4.1.	Family : Ciconiidae <i>Anasomus oscians</i> (Boddart)	R/LM	+				+	5																In other parts of the district in paddy field also.
17.	4.2.	<i>Leptopilos javanicus</i> (Horsfield)	R/LM	+				+	4																Same as 4.1.
18.	5.1.	Family : Threskiornithidae <i>Threskiornis aethiops</i> (Latham)	R/LM	+				+	1																Not very common.
19.	6.1.	Family : Anatidae <i>Dendrocygna javanica</i> (Horsfield)	R/LM			+															+	47			
20.	6.2.	<i>Lesser whistling Teal</i>	R/LM	+																	+	12			
21.	6.3.	<i>Large whistling Teal</i>	M			+															+	2			
22.	6.4.	<i>Grey Lag Goose</i>	M			+																			
23.	6.5.	<i>Ruddy Shelduck</i>	M			+																			
24.	6.6.	<i>Anas crecca</i> Linnaeus	M			+																			
25.	6.7.	<i>Common Teal</i>	M			+																			
26.	6.8.	<i>Anas strepera</i> Linnaeus	M			+																			
27.	6.9.	<i>Anas penelope</i> Linnaeus	M			+																			
28.	6.10.	<i>Anas querquedula</i> Linnaeus	M			+																			
29.	6.11.	<i>Garganey</i>	M			+																			
30.	6.12.	<i>Anas clypeata</i> Linnaeus	M			+																			
		<i>Shoveller</i>	M			+																			
		<i>Nettion rufina</i> (Pallas)	M			+																			
		<i>Redbreasted Pochard</i>	M			+																			
		<i>Avitha ferina</i> (Linnaeus)	M			+																			
		<i>Common Pochard</i>	M			+																			

Table I Contd.

Sl. No.	Sp. No.	Name of Family & Species	S	SF	TU	TO	LO	PA	KA	MU	RU	SR	RB	RS	Remark
				Mo	PM	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Km ²	
31.	6.13.	<i>Aythya nyroca</i> (Guldenstadt) White-eyed Pochard	M	+					+	106		+	98		
32.	6.14.	<i>Aythya fuligula</i> (Linnaeus) Tufted duck	M	+		+		+	416	392	+	28	+	152	
33.	6.15.	<i>Nettion curonandellianus</i> (Gmelin) Cotton Teal	R	+								+	32	+	Also observed in other inland waters.
34.	7.1.	Family : <i>Accipitridae</i> <i>Circus aeruginosus</i> (Linnaeus) Marsh Harrier	M	+		+					+				Same as 7.1.
35.	7.2.	<i>Haliaeetus indus</i> Boddaert Brahmav Kite	R/LM	+		+		+	2						Population low.
36.	8.1.	Family : <i>Falconidae</i> <i>Falco aquiloides</i> Linnaeus Water Rail	M	+		+									Not seen in any other area of the district.
37.	8.2.	<i>Porzana pusilla</i> (Pallas) Baillon's Crane	M	+				+	2						Same as 8.1.
38.	8.3.	<i>Anas platyrhynchos</i> (Pennant) Whitebreasted Waterhen	R	+		+		+	3	4	+	2	+	8	More common in other inland water bodies.
39.	8.4.	<i>Gallinix chinensis</i> (Gmelin) Water Cock	R/LM	+								+	9	+	Also found in other inland water bodies.
40.	8.5.	<i>Gallinula chloropus</i> (Linnaeus) Moorhen	R/LM	+				+	10		+	5	+	12	Same as 8.4.
41.	8.6.	<i>Porphyrio porphyrio</i> (Linnaeus) Purple Moorhen	R/LM	+				+	2				+	3	Not so plentiful.
42.	8.7.	<i>Fulica atra</i> Linnaeus Coot	R/LM	+		+		+	30	42			+	37	Common in inland waters.

Table I Contd.

Sl. No.	Sp. No.	Name of Family & Species	S	SE		TU	TO	LO		PA		KA		MU	RU	SB	RB	RS	Remark	
				Mo	PM			Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si							
43.	9.	Family : Jacanidae <i>Hydrophasianus chirurgus</i> (Scopoli) Pheasant-tailed Jacana	R/LM	+	+							+	3				+	7	Found throughout the district. More common in land waters. Also found in other inland waters.	
44.	9.2.	<i>Metopidius indicus</i> (Latham) Bronze-winged Jacana	R	+	+					+	3						+	7		
45.	10.	Family : Rostratulidae <i>Rostratula benghalensis</i> (Linnaeus) Painted Snipe	R/LM		+		+	2				+	2						Not so plentiful.	
46.	10.1.	<i>Family : Recurvirostridae</i> <i>Himantopus himantopus</i> (Linnaeus) Black-winged Stilt	R/LM	+						+	1								Not very common.	
47.	11.	Family : Charadriidae <i>Vanellus indicus</i> (Boddaert) Red-wattled Lapwing	R/LM	+	+		+	2		+	1	+	2	+	2			+	More common in wasteland and meadows. Population less than 12.1.	
48.	11.1.	<i>V. malabaricus</i> (Boddaert) Yellow wattle Lapwing	R/LM	+	+													+	5	
49.	12.	Family : Charadriidae <i>Charadrius dubius</i> Scopoli Little Ringed Plover	LM	+			+	2		+	1	+	2	+	2			+	Population quite good in the district but restricted to some area. Restricted in some area.	
50.	12.1.	<i>C. placidus</i> J.E. Gray Long-billed Ringed Plover	M	+														+	7	
51.	12.2.	<i>Tringa totanus</i> (Linnaeus) Common Redshank	M	+						+	1	+	1					+	1	Very few seen.
52.	12.3.	<i>T. stagnatilis</i> (Bechstein) Marsh Sandpiper	M	+			+	1		+	1	+	2						+	Same as 12.5.
53.	12.4.	<i>T. nebularia</i> (Günner) Greenshank	M	+			+	1											+	Same as 12.5.
54.	12.5.	<i>T. glareola</i> Linnaeus Wood Sandpiper	M	+															+	Same as 12.5.
55.	12.6.	<i>T. hypoleucos</i> Linnaeus Common Sandpiper	M	+			+	2		+	3	+	2					+	6	Almost throughout the district. Rare on the district.
56.	12.7.	<i>Gallinago gallinago</i> (Linnaeus) Fanail Snipe	M	+						+	1									Same as 12.10.
57.	12.8.	<i>Philomachus pugnax</i> (Linnaeus) Ruff	M	+			+	2												
58.	13.	Family : Strigidae <i>Bubo zeylonensis</i> (Gmelin) Brown Fish Owl	R	+	+		+	1		+	1			+	1					Rare to see.

Table I Contd.

Sl. No.	Sp. No.	Name of Family & Species	S	SF		TU	TO		LO	PA		KA	MU		RU		SB		RB		RS		Remark
				No	PM	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	Po/ Si	
59.	14.1.	Family : Alcedinidae <i>Halcyon imparens</i> (Linnaeus)	R	+		+	+	2		+	2	+	+	1	-	1	+	2	+	2	+	2	Very common.
60.	14.2.	White breasted Kingfisher <i>H. coromanda</i> (Latham)	R/LM	+																	+	2	Rare seen near river while flowing through the forest and also near forest pool.
61.	14.3.	Ruddy Kingfisher <i>Alcedo alba</i> (Linnaeus)	R										+	1									Except Minguna dam not seen in anywhere of the district.
62.	14.4.	Common Kingfisher <i>Ceryle rudis</i> (Linnaeus)	R	+		+				+	3				+	2							Not very common.
63.	15.1.	Lesser Pied Kingfisher Family : Mniotiltidae <i>Argaturus palustris</i> Horsfield	R	+								+	1										Rare.
64.	15.2.	Striated Marsh Warbler <i>Acrocephalus stenorhynchus</i> (Hemprich & Ehrenberg)	M		+		+	2		+	2	+	1										Almost throughout the district.
65.	15.3.	Indian Great Reed Warbler <i>A. orientalis</i> (Temminck & Schlegel)	M		+		+	4		+	2	+	4										Same as 18.2.
66.	15.4.	Eastern Great Reed Warbler <i>A. bistrigatus</i> Swinhoe	M		+		+	2															Not common.
67.	15.5.	Black breasted Reed Warbler <i>A. agricola</i> (Jordan)	M		+		+	2							+	2							Common
		Paddyfield Warbler																					

Table I Contd.

Sl. No.	Sp. No.	Name of Family & Species	S	SE		TU	TO		LO	PA		KA	MU		RU	SB		RB	RS	Remark
				Mo	PM		Po/ Si	Po/ Si		Po/ Si	Po/ Si		Po/ Si	Po/ Si		Po/ Si	Po/ Km ²			
68.	16.1.	Family : Motacillidae <i>Motacilla alba</i> Linnaeus Pied Wagtail	M	+	+	5	+	3	+	2	+	3	+	3				+	6	Common
69.	16.2.	<i>M. flava</i> Linnaeus Yellow Wagtail	M	+	+	5	+	2	+	4	+	3						+	5	Limited but where present population is satisfactory.
70.	16.3.	<i>M. cinerea</i> Tunstall Grey Wagtail	M	+	+	2	+	3	+	2	+	2	+	3	+	4		+	4	Common.
71.	16.4.	<i>M. madagascariensis</i> Gmelin Large Pied Wagtail	R	+	+	2	+	1		+	2							+	3	Common
72.	17.1.	Family : Laridae <i>Chidonias hybrida</i> (Pallas) Whiskered Tern	M		+						+	3	+	2	+	1		+	2	Not throughout the district.

Important Notice to our Readers,
members
and Contributors of Articles for Cheetal

1. *The annual subscription to be paid by annual members falls due on 1st April of current financial year. Many of our annual members have not paid their subscription for past few years despite repeated requests. Due to apathy of such members the Society is facing great financial hardship. This may kindly be treated as an urgent notice for requesting members to pay the pending dues. this is your society & can run only with your support & sympathy. Members are earnestly requested to clear their outstanding dues even if they have to do it in installments.*
2. *Members & subscribers are also earnestly requested that in addition to annual subsipctions, voluntary DONATIONS may be made to help the society to tide over its financial crisis.*
3. *Many of our regular contributors of artcils have stopped contributing for Cheetal which is a matter of concern for the Society. Members & contributors of artcils are requested to send their artcils along with a soft copy (if possible) to make the journal more meaningful. Members are also requested to motivate & encourage their friends, aquintances & family members to contribute useful artcils for Cheetal including articles for Young Readers setion, Cheetal quarterly news and your views about the magezin or any particular article or suggestions for improvement. Any old Cheetal article of current relevance may also be suggested.*

A.S. Negi

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Due to increase in printing charges of the Society's Journal, Cheetal, which is supplied free to all category members, we are compelled to enhance the membership fee of the Wildlife Preservation Society as under.

<i>Kind of member</i>	<i>Revised membership fee (In Rupees)</i>
<i>Life member</i>	2500/-
<i>Institutional member</i>	400/- per year 3500/- for life.
<i>Annual member</i>	250/- per year.
<i>Student member</i>	100/- per year.

The revised fee will be applicable to new members with immediate affect. For existing annual members of all kind it will be applicable from 1-4-2007.

All members are entitled to a free copy of our Quarterly Journal - Cheetal.

The inconvenience highly regretted.



Phone : 0135-2652410

THE WILDLIFE PRESERVATION SOCIETY OF INDIA

(Established 1958)

7, Astley Hall, Dehra Dun, U.A.

APPLICATION FORM

I,
hereby
apply to be admitted as a Patron/Life/Annual/Affiliated/Institutional/Student Member of
the Wildlife Preservation Society of India.

My interests are

Name

Designation

Address

Phone No. & Email

Date of Birth

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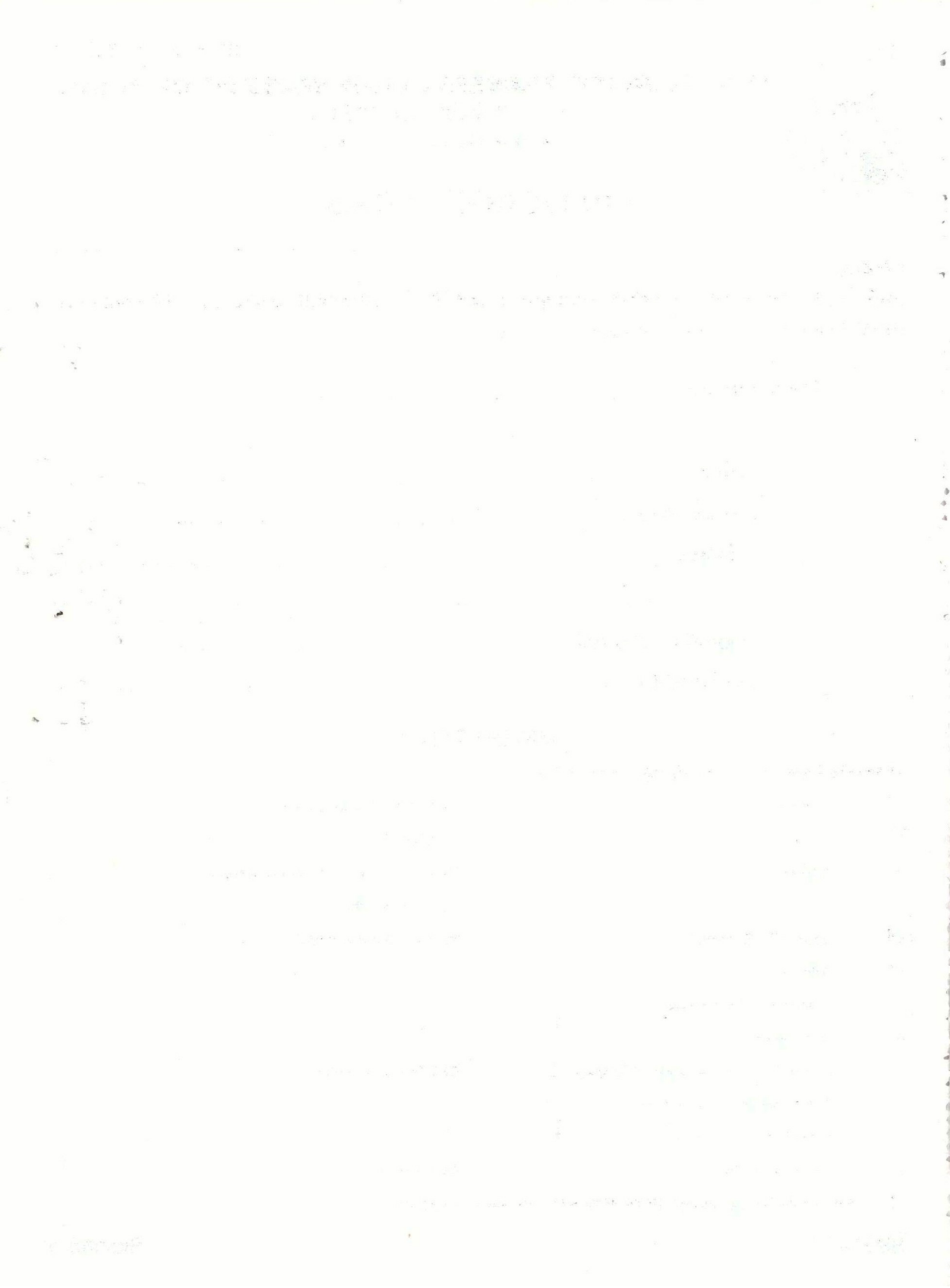
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Signature





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The Wildlife Preservation Society of India

1. The aims and objects of the Society are as follows :-

- (a) To promote interest and impart knowledge regarding the preservation and conservation of all forms of wildlife, particularly among the youth of the country.
- (b) To cooperate with the Govt. of India and State Governments and with others Societies and Institutions having similar aims and objects in working for the interests of wildlife.
- (c) To assist in enforcing and actively supporting the Forests Acts. Wild Birds and animals Protections Acts and Rules etc. of State Governments and the Indian Arms Act and Rules in so far as they pertain to wildlife and to bring to the notice of the authorities any infringement of the same and to assist in the detention and prosecution of offenders in respect of such laws.
- (d) To advise and help the Govt. and wildlife administrators in the formation, maintenance and protection of Sanctuaries and National Parks, preservation of wildlife in general and endangered species of India in particular and in the introduction of exotic species into the country, rehabilitation of endangered species etc. and in the formulation and amendments of rules and acts, so as to conserve and increase wildlife stocks.
- (e) To raise funds for carrying out the above aims and objects and to found and maintain museums reading rooms and libraries of natural history in order to disseminate knowledge regarding wildlife.
- (f) To carry out publicity and propaganda for the preservation of wildlife in India by means of monographs, journals, films, filmstrips and other feasible methods.
- (g) To assist members of the Society in obtaining facilities for viewing and photographing wildlife in India.
- (h) To conduct research into the problem of Wildlife management in India, and in pursuance of this, to initiate, encourage and, where possible assist in the projects of the study of threatened species and related objects and to provide reference and research facilities for such work.
- (i) To carry on such other activities which will serve the above subjects.

2. What membership of Wildlife Preservation Society of India will entitle you to ?

- (1) You will become an active member of the growing group of Wildlife enthusiasts, who enjoy working for and spreading the knowledge of how to conserve India's heritage of wildlife for posterity.
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